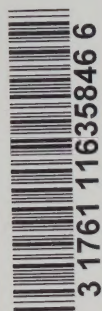


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NEW TORONTO INTERNATIONAL AIRPORT, PICKERING:
WRITTEN SUMMARY



REFERENCES AND APPENDICES

containing

LIST OF REFERENCES FOR PART I

LIST OF REFERENCES FOR PART II

LIST OF REFERENCES FOR PART III

APPENDIX A, related to PART I

APPENDIX B, related to PART II

APPENDIX C, related to PART III

TORONTO AREA AIRPORTS PROJECT
CANADIAN AIR TRANSPORTATION ADMINISTRATION
MINISTRY OF TRANSPORT

NEW TORONTO INTERNATIONAL AIRPORT, PICKERING:
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LIST OF REFERENCES
FOR
PART I: BACKGROUND TO GOVERNMENT COMMITMENTS

- 1) A number of reports are relevant, including those deposited as documents 1.1, 2.4, 2.5, 2.6, 2.7, 2.8, 2.13, 2.14 and B 1.
- 2) Summary of Forecasts, December 1973 deposited as document B 1. Document B 1 includes much new evidence. It also summarizes the forecasts at a number of major United States airports, and provides detailed references to source material.
- 3) A useful summary is "Demands for Air Transport: 1980-1990" by K. Hammerskjold, Director General of the International Air Transport Association, included in "Airports for the '80s; Proceedings of the Fourth World Airports Conference, 3-5 April 1973" published by the Institution of Civil Engineers, London, England, 1973.
- 4) Toronto International Airport (Malton) Systems Analysis (ORD65) November 1965 deposited as document A 1.
- 5) Aviation in Canada 1971, February 1972 deposited as document 2.14.
- 6) Master Plan Report: Toronto International Airport, November 1967 deposited as document 1.1.
- 7) Airport Activity Statistics: Aviation Statistics Centre Service Bulletin, Volume 5, No. 23, May 1973.
- 8) Minutes of Meetings of Intergovernmental Committee deposited as Provincial Documents I and II.

9) These are a matter of public record - the press.

Major opposition came from the Mississauga Homeowners' Association who submitted a Brief Opposing Expansion of Toronto International Airport, dated December 13, 1968, deposited as document A 20.

10) Estimate based on actual 1965 CNR contours and Census data for 1961 and 1971.

11) Toronto International Airport, 1969
deposited as document 1.2.

Toronto International Airport: Recommended Runway Configuration,
October 1968
deposited as document 9.2.

12) Announcement by the Minister of Transport,
dated December 20, 1968.

13) Public Statement by W. Darcy McKeough,
re Airport Noise at Malton, October 9, 1969
deposited as Provincial Document III.

14) Air Transportation Statistics - Forecasts: Air Traffic
Movements, Passengers, Cargo, December 1969
deposited as document 2.4.

15) Regional Impact of a New International Airport for Toronto,
March 1970
deposited as document 13.46.

16) Revised Air Traffic Forecasts for the Toronto Region, May 1971
deposited as document 2.7.

17) Air Statistics and Forecasts to be used by the Toronto
Airport Planning Team, dated 1970
deposited as document 2.5.

Review and Update of Existing Air Traffic Forecasts, March 1971
deposited as document 2.6.

N.B. The figure of 66 million is an interpolation between
the pessimistic and optimistic forecasts. This inter-
polation is given in:

Second Toronto Airport Site Evaluation, September 1970
deposited as document 1.11.

- 18) Air Passenger Forecasts for Toronto,
December 1971/January 1972
deposited as document 2.13.
- 19) A Framework for Air Cargo Forecasting, Toronto Region 1970-2000
March 1971
deposited as document 3.1.

Air Cargo Forecasts: The Toronto Region 1970-2000,
April 1972
deposited as document 3.2.
- 20) Revised Aircraft Movement Forecasts, November 1971
deposited as document 2.9.

Aircraft Movement Forecasts: Update April 1973
deposited as document B 5. Document B 5 is new evidence
updating the earlier Aircraft Movement Forecasts.
- 21) Forecasts of General Aviation for the Toronto Region,
January 1973
deposited as document A 2.
- 22) Progress Report on Expansion of Major Airport Facilities in
the Toronto Region, May 1969
deposited as document 1.5.
- 23) Second Toronto Airport Site Evaluation: Technical Report,
September 1970
deposited as document 1.11.
- 24) References include both summary documents and detailed studies
of specific aspects. These include documents deposited
under the following reference numbers: 1.7, 1.8, 1.9,
1.11, 1.18, 13.12, 13.13, 13.14, 13.15, 13.16, 13.17,
13.18, 13.19, 13.20, 13.21, 13.22, 13.23, 13.24, 13.25,
13.26, 13.27, 13.28, 13.29, 13.30, 13.31, 13.32, 13.33,
13.34, 13.35, 13.36, 13.37, 13.38, 13.39, 13.40, 13.41,
13.46 and 13.47.
- 25) Toronto Airport Planning Position Paper, May 1970
deposited as document 1.8.
- 26) Advisory Review: Toronto International Airport, May 1970
deposited as document 1.7.

27) Provision of Advice and Assistance in the Evaluation of A.T.C.
Factors Affecting the Choice of Sites for a New Toronto Airport,
May 1970
deposited as document 13.26.

28) Toronto Airport Planning Position Paper, August 1970
deposited as document 1.9.

29) Toronto International Airport Expansion, August 1970
deposited as document 9.3.

30) Toronto International Airport (Malton) Road Access to 1990,
November 1970
deposited as document 9.4.

Toronto International Airport (Malton) Ground Transportation
to Year 2000
November 1970
deposited as document 9.5.

Ground Transportation Requirements for Infield Terminal,
November 1970
deposited as document 9.6.


31) Toronto Airport Planning Position Paper, May 1970
deposited as document 1.8.

Toronto Airport Planning Position Paper, August 1970
deposited as document 1.9.

A Study of Aircraft Noise Considerations, Toronto International
Airport, with regard to Opening Date of Toronto II, May 1970
deposited as document 7.2.

32) A Description of the CNR and NEF Systems for Estimating
Aircraft Noise Annoyance, October 1971
deposited as document 7.1.

33) Aircraft Noise Considerations, Toronto International Airport,
Malton, 1971-1986, September 1972
deposited as document 7.3.



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University of Toronto

<https://archive.org/details/31761116358466>

- 34) The whole question of runway capacity is very complex.

Reference should be made to documents deposited as:

4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7 and 4.8. The runway capacities in use at present represent a revision of earlier runway capacity volumes to take account of the adverse effects of wake turbulence caused by heavy jet aircraft. Current standards related to the operation of heavy jet aircraft are given in:

Air Traffic Control Circular Letter 6-3-P310-73, October 25, 1973 deposited as document B 7.

A report which defines the revised runway capacity volumes for planning purposes is in preparation, and will be deposited when available.

- 35) Summary Report: Planning of T.I.A. Malton, December 1973 deposited as document A 14.

- 36) After a great deal of investigation the Ontario Ministry of Transportation and Communications stated that a connection to Highway 401 cannot be provided (reference letter dated September 27, 1973).

- 37) Cost Projections to the Year 2000, T.I.A. Malton and N.T.I.A. Pickering, October 1973 deposited as document B 25.

This is new evidence, but much of the analysis on which the costs are based was undertaken prior to January 30, 1973.

- 38) T.A.P. System Analysis, February 1971 deposited as document 1.16.

- 39) Air Passenger Distribution and Airport Assignment Study, June 1971 deposited as document 1.19.

- 40) Meteorology Study, February 1970 deposited as document 13.41.

This also includes a set of nine comparative graphs illustrating ceiling and visibility conditions completed as a result of further analysis in May 1971.

- 41) Ground Transportation Cost Analysis, Alternative Airport Systems, February 1972 deposited as document 13.29.

This report records the ground transportation evaluations undertaken in late 1970 and 1971.

42) Malton Survey and Measurement Project, January 1972
deposited as document 2.12.

43) Ground Transportation Travel Surveys, August 1969
deposited as document 2.11.

44) Air Passenger Distribution and Airport Assignment Study,
Stage 1 - Phase 2, January 1972
deposited as document 1.24.

Also see reference (39).

45) Design for Development: The Toronto-Centred Region, May 1970
deposited as document A 5.

Design for Development: A Status Report on the Toronto-Centred
Region, August 1970
deposited as document A 6.

46) Beverly and Pickering Townships Site Appraisal Documents, June 1971
deposited as document 1.20.

Definition of Site Envelopes, Southwest and Northeast Sites
deposited as document 1.21.

47) Preliminary Climatological Assessment of Potential Airport Sites
in the General Vicinity of Toronto, 1968/69
deposited as document 13.40.

Climate of the Pickering Airport Site, September 1972
deposited as document A 17.

48) Progress Report and Recommended Approach for Toronto Area
Airports System, September 1971
deposited as document 1.23.

49) Airspace Compatibility, Toronto Airports System, 1971
deposited as document 1.22.

Airspace Organization and Management in the Two Airport System:
N.T.I.A. Pickering and T.I.A. Malton, December 1973
deposited as document B 19.

50) Proposed Toronto Airport II Environmental Impact Study,
February 1972
deposited as Provincial Document XII.

- 51) Subsequently this agreement was incorporated in the Annex of Understanding agreed by the two Governments, March 1, 1972 deposited as document A 7.
- 52) Estimates made during site evaluation were recorded in the public information paper "People and the New Toronto Airport", June 1972 deposited as document 18.2.

Subsequent more detailed work has confirmed earlier estimates and is deposited as new evidence as document B 8.

- 53) Land Use Dynamics: The Toronto II Airport Study, July 1972 deposited as document A 4.
- 54) Soil Capability for Agriculture: Canada Land Inventory
Map Scale 1:250,000
Available from the Queen's Printer
(Toronto and Lake Simcoe Streets)
- 55) Manuscript Maps loaned by the Province of Ontario.
- 56) Soil Survey of York County, Report No. 19 of the Ontario Soil Survey
Soil Survey of Ontario County, " No. 23 " " " " "
Published jointly by Canada: Department of Agriculture, Ottawa
Ontario: Ministry of Agriculture, Toronto
- 57) Aerodrome Standards, Physical Characteristics and Zoning
Requirements, December 1973
deposited as document A 3.

The figure of 5,000 feet appears in a number of sources and is not considered new evidence, but this report is the most recent official reference.

- 58) Land is in agricultural use at Toronto International Airport, Malton, Ottawa International Airport, Winnipeg International Airport, Calgary International Airport, Edmonton International Airport, Victoria International Airport and Vancouver International Airport. On average 43% of the land at these airports is being farmed. The most extensive agricultural use is at Edmonton where over 80% of the airport site is still farmed.

In Europe airports have generally tended to be smaller, and airport fences are frequently very close to operational runways. In these circumstances farming has continued right up to the airport fence.

Estimates prepared for N.T.I.A. Pickering indicate that by the year 2000 approximately 50% of the Pickering site will be available for agricultural use.

- 59) Report on a Preliminary Investigation of Bird Populations and Movements Affecting the Proposed New Toronto Airport Site, September/December 1972 deposited as document A 15.

A major study to supplement the Preliminary Investigation was commenced in January 1973 and the report of this study should be available early in 1974.

- 60) Regional Impact of a New International Airport for Toronto, March 1970 deposited as document 13.46.

Land Use Planning Segment of Toronto II Airport Noise Land Study, February 1970 deposited as document 13.24.

Toronto II Airport Noise Lands Study, Land Economics Segment, March 1970 deposited as document 13.25.

- 61) Review of Proposed Airport Sites E and F - Regional Development Plan deposited as Provincial Document X.

Also, Statement to Legislature by the Hon. Darcy McKeough, June 6, 1972 deposited as Provincial Document I B.

- 62) The Ontario Government and the Pickering Airport Site deposited as Provincial Document I A.

- 63) Expansion of Aviation Systems for Toronto and Southwestern Ontario: Ministry of Transport Releases, March 2, 1972 deposited as document A 9.

Government of Ontario Releases, March 2, 1972 deposited as document A 10..

- 64) Annex of Understanding, March 1, 1972 deposited as document A 7.

- 65) Transportation Study, Alternative Site Locations, April 22, 1970 deposited as document 13.20.

A Study of Toronto Airport II Ground Transportation to Year 2000, November 1970 deposited as document 13.28.

- 66) Toronto Commuter Rail Study, November 1972
deposited as document A 8.
- 67) Financial Planning Report Two
deposited as document 1.26.
- 68) New reports relating to the on-going site investigational
planning of N.T.I.A. Pickering have been
deposited as documents B 11 through B 24.
- 69) Ground Transportation Review, Sites E and F
deposited as Provincial Document XI.
- 70) Sections 5 and 6 of the Annex of Understanding, March 1, 1972
deposited as document A 7.

Expansion of Aviation Systems for Toronto and Southwestern
Ontario: Ministry of Transport Releases, March 2, 1972
deposited as document A 9.

Government of Ontario Releases, March 2, 1972
deposited as document A 10.

- 71) These include New York, London, England, and
Paris, France.
- 72) Airport Statistics thru June 1971
Port of New York Authority, Aviation Economics Division
- 73) Malton Survey and Measurement Project, January 1972
deposited as document 2.14.
- Summary of Forecasts, December 1973
deposited as document B 1.
- 74) Population Affected by Aircraft Noise, T.I.A. Malton and
N.T.I.A. Pickering, December 1973
deposited as document B 8.

This is new evidence but confirms earlier estimates.

- 75) Surface Water Monitoring Programme, October 1973
deposited as document B 15.

Preliminary Drainage Study, March 1973
deposited as document B 21.

- 76) The Impact of N.T.I.A. Pickering on the Toronto Region, December 1973
deposited as document B 16.

The Urban/Regional Impact of Airport Development, Report I:
Calibration of the Empiric Growth Allocation Model, September 1972
deposited as document A 18.

- 77) The information quoted is drawn from a study currently under way. On completion a report will be prepared, and this will be deposited when available.

- 78) Air Passenger Distribution and Airport Assignment Study,
Phase II - Stage 2, April 1972
deposited as document A 19.

The airline costs summarized in this report represent a composite case, and not any specific airline. The base data on which the detailed analyses rely was supplied to the team on a confidential basis, and hence cannot be deposited.

- 79) Revolving Fund Authority, January 1970, March 1971
deposited as document A 11.

This is a compilation of relevant documentation, together with an explanatory context statement.

- 80) e.g. general aviation, air freight.

- 81) The complete list together with the context document prepared to reference these studies is included in Appendix A. The studies and public information brochures are referenced as follows:

1.1 through	1.27
2.1 through	2.14
3.1 and	3.2
4.1 through	4.8
5.1 through	5.4
6.1 through	6.4
7.1 through	7.3
8.1 through	8.15
9.1 through	9.11
11.1 through	11.8
12.1 through	12.5
13.1 through	13.47
16.1 through	16.3
17.1	
18.1 through	18.16

- 82) Report of J. W. Swackhamer, Q.C., Hearing Officer
Site for Toronto II Airport
deposited as document HT XI.
- 83) Compilation of records relating to Public Support for the new
airport
deposited as document A 12.
- 84) Response to Synopsis Report of the Hearing Officer
New Toronto Airport
deposited as document HT XII.
- 85) House of Commons Debates: Official Report
Tuesday January 30, 1973
deposited as document A 13.
- 86) An Urban Transportation Policy for Ontario,
November 22, 1972
Statement by Hon. William G. Davis, Premier of Ontario.
deposited as document A 21.
- 87) This question is discussed more fully under Parts II and III of
this written summary, in which it is shown that the latest
runway utilizations adopted by the Ministry of Transport at
T.I.A. Malton do lead to fewer people being affected than
would otherwise be the case, although this is achieved by
extending the noise contours into areas that would not
otherwise be affected in some cases. See:
- Population Affected by Aircraft Noise - T.I.A. Malton
and N.T.I.A. Pickering, December 1973
deposited as document B 8.
- The results of the noise contour studies are currently being
compiled and will be deposited as soon as this work is complete.
- 88) The Effect of Parallel Runway Separation on Airport Capacity,
Toronto International Airport, August 1970
deposited as document 4.5.

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LIST OF REFERENCES
FOR
PART II: RESPONSE TO TOPICS II 1 b) THROUGH d)

- 1) Summary of Forecasts, December 1973
deposited as document B 1.

This document is an up-to-date summary of forecasts relating to all aspects of air activity including passenger and cargo volumes, aircraft types and movements, general aviation activity, etc.

- 2) Relevant reports include those
deposited as documents 1.1, 2.4, 2.5, 2.6, 2.7, 2.8, 2.13
and 2.14.
- 3) Air Passenger Forecasts for Toronto,
December 1971/January 1972
deposited as document 2.13.
- 4) House of Commons Debates: Official Report
Tuesday January 30, 1973
deposited as document A 13.
- 5) The methodology used and the source of the figures quoted is
described in a study currently being undertaken. The full
results will be deposited when the report is completed.
- 6) The analyses of the 1972 passenger survey exist in the form of
working papers. A report is being prepared and will be
deposited when available.
- 7) Income Distributions by Size in Canada - 1971
deposited as document B 9.

- 8) An Energy Policy for Canada: Phase I
Volume I - Analysis
Volume II - Appendices
deposited as document B 2.

(Issued 1973 under authority of the Ministry of Energy,
Mines and Resources, Government of Canada.)

- 9) House of Commons Debates: Official Report
Thursday December 6, 1973
Statement by the Right Honourable P. E. Trudeau (Prime
Minister), pages 8478/9
deposited as document B 4.

- 10) Oil: The Present Situation and Future Prospects
Organization for Economic Co-operation and Development,
Paris, 1973
deposited as document B 3.

- 11) Air Statistics and Forecasts to be used by the Toronto Airport
Planning Team, dated 1970
deposited as document 2.5.

Review and Update of Existing Air Traffic Forecasts,
March 1971
deposited as document 2.6.

Revised Air Traffic Forecasts for the Toronto Region,
May 1971
deposited as document 2.7.

Revised Aircraft Movement Forecasts, November 1971
deposited as document 2.9.

- 12) Summary of Forecasts, December 1973
deposited as document B 1.

Aircraft Movement Forecasts - Update, April 1973
deposited as document B 5.

Revised Air Freight Movement Forecasts 1970-2000,
April 1973
deposited as document B 6.

- 13) Calculations based on published data relating to aircraft types.

- 14) Current aeronautical publications and releases by aircraft manufacturing companies include many references to these proposals.
- 15) The latest published information is included in an article in the Globe and Mail on December 29, 1973 which is in line with previous information supplied by Air Canada. This article is deposited as document B 26.
- 16) Flight Information Manual, 1972
deposited as document 4.1.

Flight Information Manual, 1973
deposited as document B 28.
- 17) Special Procedures for Handling Heavy Jets, July 1971
deposited as document 4.6.
- 18) Procedures for Control of Aircraft Following Heavy Jet Aircraft, August 1971
deposited as document 4.7.

Heavy Jet Separation Criteria, July 1972
deposited as document 4.8.
- 19) Air Traffic Control Circular Letter 6-3-P310-73, October 25, 1973
deposited as document B 7.
- 20) This information was provided at briefing to Ministry of Transport personnel by the Transportation Systems Center, Cambridge, Massachusetts.
- 21) The runway capacities in use at present represent a revision of earlier runway capacity volumes to take account of the adverse effects of wake turbulence caused by heavy jet aircraft. A report which defines the revised runway capacity volumes for planning purposes is in preparation, and will be deposited when available.
- 22) The report of this study is in preparation, and will be deposited when available.
- 23) Public Statement by W. D. McKeough re Airport Noise at Malton, October 9, 1969
deposited as Provincial Document III.

- 24) New Housing and Airport Noise: A Supplement to the Site Planning Handbook by CMHC, Revised 1972
deposited as document C 2.
- 25) Population Affected by Aircraft Noise - T.I.A. Malton and N.T.I.A. Pickering,
December 1973
deposited as document B 8.
- 26) Aircraft Noise Considerations, Toronto International Airport, Malton, 1971-1980
September 1972
deposited as document 7.3.
- 27) Aircraft Engine Noise Reduction Programs: Summary Report
to be deposited at a later date.
- 28) Federal Aviation Regulations, Volume III
Part 36, Noise Standards: Aircraft Type Certification,
December 1, 1969
deposited as document A 22.
- 29) A summary report describing aircraft operational procedures designed to reduce the effects of noise (including those currently in use and those still under investigation) is in preparation and will be deposited when completed.
- 30) See reference (25). Document B 8 is a working report describing population counts related to specific sets of NEF contours. A full report with diagrams, etc. is in preparation and will be deposited when available.
- 31) Revised Air Traffic Forecasts for the Toronto Region, May 1971
deposited as document 2.7.
- 32) Master Plan Report, Toronto International Airport,
November 1967
deposited as document 1.1.
- Toronto International Airport: Recommended Runway Configuration,
October 1968
deposited as document 9.2.

- 33) Toronto Airport Planning Position Paper, August 1970
deposited as document 1.9.
- 34) Summary Report: Planning of T.I.A. Malton, December 1973
deposited as document A 14.
- 35) Cost Projections to the Year 2000, T.I.A. Malton and
N.T.I.A. Pickering, October 1973
deposited as document B 25.
- 36) Opinion of Market Value of 3863 Acres of Land, Town of
Mississauga, Malton Airport, dated July 1973
deposited as document B 27.
- 37) Reports listed in Appendix B and
deposited as documents B 11 through B 24.

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LIST OF REFERENCES
FOR
PART III: RESPONSE TO TOPIC II 2

- 1) Passenger Distribution and Airport Assignment Study,
Phase II, Stage 2: Airport Roles, April 1972
deposited as document A 19.
- 2) Airspace Organization and Management in the Two Airport System:
N.T.I.A. Pickering and T.I.A. Malton, December 1973
deposited as document B 19.

This report is subject to any amendments that may become necessary in the light of on-going work on the National Airspace Plan for Eastern Canada.

- 3) References to public concern may be found in many publications.
Relevant to the Toronto situation is:

Brief Opposing Expansion of Toronto International Airport
December 13, 1968
deposited as document A 20.

- 4) Land Use in the Vicinity of Airports
deposited as document C 1.
- 5) A description of the CNR and NEF Systems for estimating
Aircraft Noise Annoyance, October 1971
deposited as document 7.1.
- 6) New Housing and Airport Noise: A Supplement to the Site
Planning Handbook, CMHC, revised 1972
deposited as document C 2.
- 7) Numerous sources, including Noise Exposure Forecasts:
Evolution, Evaluation, Extensions and Land Use Interpretations,
August 1970
deposited as document C 3.

- 8) Population Affected by Aircraft Noise, T.I.A. Malton and N.T.I.A. Pickering, December 1973
deposited as document B 8.

This is a working report describing population counts related to specific sets of NEF contours. A full report with diagrams, etc. is in preparation, and will be deposited when available.

- 9) Aircraft Engine Noise Reduction Programs: Summary Report to be deposited at a later date.
- 10) Noise Source Abatement Technology and Cost Analysis, Including Retrofitting, July 1973
deposited as document C 4.
- 11) Airport Activity Statistics published by Statistics Canada.
The most recent volume relates to 1972.
- 12) Curves and diagrams are based on the information developed for the reports identified in (8) above.
- 13) Aircraft Movement Forecasts - Update, April 1973
deposited as document B 5.
- Revised Air Freight Movement Forecasts 1970-2000, April 1973
deposited as document B 6.
- 14) Annex of Understanding, March 1, 1972
deposited as document A 7.
- 15) Aerodrome Standards, Physical Characteristics and Zoning, Requirements, December 1973
deposited as document A 3.
- 16) The Impact of NTIA Pickering on the Toronto Region, December 1973
deposited as document B 16.
- Employee Shift Analysis and Employee Movement Forecasts: Summary Report, September 1973
deposited as document C 15.

- 17) Design for Development: The Toronto-Centred Region, May 1970
deposited as document A 5.

Design for Development: A Status Report on the Toronto-Centred Region, August 1970
deposited as document A 6.

- 18) Malton Survey and Measurement Project, January 1972
deposited as document 2.12.

Also calculations from the survey undertaken in the summer of 1972.

- 19) Cost Projections to the Year 2000, TIA Malton and NTIA Pickering, October 1973
deposited as document B 25.

- 20) Air Passenger Distribution and Airport Assignment Study, Stage I - Phase II, January 1972
deposited as document 1.24.

- 21) The information quoted is drawn from studies currently under way. As each study is completed, a report will be prepared and this will be deposited when available.

- 22) Summary Report: Planning of TIA Malton, December 1973
deposited as document A 14.

- 23) Opinion of Market Value of 3863 Acres of Land, Town of Mississauga, Malton Airport, July 1973
deposited as document B 27.

- 24) NTIA - Initial Stage of First Phase Development Schedule, April 1973
deposited as document C 6.

- 25) Computer Analysis of Runway Utilizations at TIA Malton for the years 1970, 1971 and 1972.

- 26) See Part I of this written summary, pages 22 and 23.

- 27) Minutes of Proceedings and Evidence of the Standing Committee on Transport and Communications, Issue No. 5,
Tuesday April 17, 1973
deposited as document C 5.
- 28) Summary Report: Planning of TIA Malton, December 1973
deposited as document A 14.
- 29) Reference letter from the Ontario Ministry of Transportation and Communications, dated September 27, 1973.
- 30) An Urban Transportation Policy for Ontario, November 22, 1972.
Statement by Hon. William G. Davis, Premier of Ontario
deposited as document A 21.
- 31) Toronto Commuter Rail Study, November 1972
deposited as document A 8.
- 32) Part of the Metropolitan Toronto Transportation Plan Review.

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APPENDICES

APPENDIX A

Appendix A lists source documents and relevant information available to the Government of Canada in reaching its decision that the air transportation needs of the central Ontario market require that there be established another international airport in addition to the Toronto International Airport and the choice of site.

The material deposited is organized as follows:

I. Documents made public prior to the Public Hearings relating to the site near Pickering held under the Expropriation Act. This material is listed and referenced in the document "Reports and Information Relating to the New Toronto Airport", attached as EXHIBIT I to this Appendix.

II. Documents tabled in the Ontario Legislature on June 6, 1972. This material is referred to as "Provincial Documents" and is listed and referenced in EXHIBIT II to this Appendix. Note:

1. The reference numbers IA and IB have been attached to two documents which were not numbered by Ontario.
2. Provincial Document IV is identical to Report 13.46 listed in EXHIBIT I.

III. Ten volumes of verbatim testimony taken at the Public Hearings under the Expropriation Act before Mr. J. W. Swackhamer, Q.C., the Report of the Hearing Officer as submitted to the Minister of Public Works, and the Response to the Synopsis Report of the Hearing Officer.

IV. Exhibits presented at the Public Hearings. This material is listed and referenced in EXHIBIT IV to this Appendix.

V. Other relevant documentation available to the Government of Canada in reaching its decision. This material is listed and referenced in EXHIBIT V to this Appendix.

EXHIBIT I TO APPENDIX A
is included at the end of this volume,
following Appendix C

EXHIBIT II

Documents Tabled in the Ontario Legislature on June 6, 1972

Provincial Document	Title
IA*	Ontario Government Pickering Airport Site
IB*	Statement to Legislature by W.D. McKeough June 6, 1972
I*	Meeting Summary Dated November 19, 1968
II*	Internal Memo Dated December 10, 1968
III*	Public Statement by W.D. McKeough, Re: Airport Noise at Malton, October 9, 1969
IV	Regional Impact of the New Toronto International Airport (The Hodge Report)
V	Submission to the Government of Canada with Respect to Location of the Second International Airport
VI	Population and Dwelling Estimates - Malton Airport
VII	Toronto Airport Location - Proposed Malton Expansion
VIII	A Brief Study Outlining the Road Network and Rapid Transit System to Serve Malton Airport in the Year 2000
IX	Summary Report on Status of Airport Planning - Toronto II
X	Review of Proposed Airport Sites E and F - Regional Development Plan
XI	Ground Transportation Review of Sites E and F
XII	Proposed Toronto II - Environmental Impact Study

* Numbers IA and IB have been attached to documents not numbered by Ontario. Documents IA, IB, I, II and III are contained in the first volume. All other documents constitute separate volumes.

EXHIBIT III

Verbatim Testimony Taken at the Public Hearings
under the Expropriation Act
before Mr. J.W. Swackhamer, Q.C.

<u>Document Number</u>	<u>Date of Testimony</u>
HT I*	November 25, 1972
HT II	November 27, 1972
HT III	November 28, 1972
HT IV	November 29, 1972
HT V	November 29, and November 30, 1972
HT VI	December 1, 1972
HT VII	December 5, 1972
HT VIII	December 6, 1972
HT IX	December 7, 1972
HT X	

* All of the Hearing Testimony documents bear the title "Public Hearing - The Expropriation Act - Revised Statutes of Canada 1970".

HT XI	Report of J.W. Swackhamer, Q.C. Hearing Officer Site for Toronto II Airport
HT XII	Response to Synopsis Report of the Hearing Officer New Toronto Airport

EXHIBIT IV

Exhibits Presented at the Public Hearings
under the Expropriation Act before Mr. J. W. Swackhamer, Q.C.

<u>Exhibit No.</u>	<u>Title</u>
1	Order of the Minister of Public Works dated November 8, 1972
2	Appointment made by the Attorney General of Canada dated November 9, 1972
3	Notice of Public Hearing dated November 15, 1972
4	Notices published in the News Advertiser, Toronto Daily Star, Toronto Globe and Mail, the Toronto Sun and the Markham Economist
5	Report by L. Almack - Analysis of the Decision
6	Map of Metropolitan Toronto, N.T.I.A. Pickering, Cedarwood Townsite and Provincial Land Use Freeze
7	Paper entitled "Pickering, the Toronto II Airport and North Pickering Development" by K. Fallis
8	ARDA Land Classification Map
9	Article from Toronto Daily Star by G. Hodge
10	Booklet "Ontario Economic Review" May/June 1972
11	Summary by P. Oehm
12	Press Release by W. D. McKeough
13	"Design for Development: TCR Concept" May 1970
14	"Design for Development: Status Report on TCR by W. D. McKeough" August 1971
15	Strok Report "A Physical Development Study of Selected Urban Centres for New T.I.A."
16	Newspaper clipping November 27, 1972 Toronto Daily Star
16a	Speech entitled "Canadian Air Transportation Administration - Its Philosophy and Its Framework for the Future" by W. H. Huck
16b	Speech July 1971 at Calgary Conference
16c	"STOL Aircraft in Future Transport System" by E. E. Marshall

EXHIBIT IV (cont'd)

Exhibit No.	Title
16d	"Future of Aeronautics" September 1971 by John Allen
17	Newspaper clipping January 1972
18	Newspaper clipping June 12, 1972
19	Memorandum by P. Creighton, F.C.A.
19a	Brief by W. Draper
20	Submission by W. Baird
21	Memo from Environmental Law Association re: Nora Geraghty
21a**	Analysis by B. Buckles
21b**	"Catchment" Area speech June 1972, by Mr. Davis
22	Airport Need Summary
23	Notes for an Address by the Honourable Don Jamieson, Minister of Transport to the York County and District Real Estate Board at Aurora, Ontario, June 14, 1972
24	Objections of Town of Whitchurch-Stouffville to Expropriation of Lands for an Airport in Pickering November 1972
25	Map of Whitchurch-Stouffville
26	Letter to the Minister of Public Works from the Leader of the Opposition
27	Map of Whitchurch-Stouffville filed by Mr. Stevens November 30
28	Map of Town of Whitchurch-Stouffville
29	Map of New International Airport at Montreal (Ste. Scholastique)
30	Polls and votes within Whitchurch-Stouffville Area
31	List of members of the Metropolitan Toronto Airport Review Committee
32	Booklet entitled "Hercules Amphibian"

EXHIBIT IV (cont'd)

Exhibit No.	Title
33	Globe and Mail articles by Mr. Gellmar (two)
34	Department of Transport publication entitled "Passenger and Cargo Forecasts including Methodology for the Toronto Area Airports System April 2, 1972
35	Notice of Objections of Mr. T.J.F. Lash
36	Article entitled "Magnetic Levitation for Guided Ground Transport" Engineering Digest, October 1972
37	Paper by Dr. Norman Pearson entitled "The Great Lakes as a Human Resource"
38	Letter of June 30 to Mr. Lash from Mr. Jack Davis, Minister of Environment
39	Reproduction of article in Toronto Star, April 30
40	Document published by Environmental Law Research Foundation entitled "Public Rights and Environmental Planning", January 1972
41	Land Use Dynamics Toronto II Airport Study
42	Bound Volume entitled "Aquaport Systems International"
43	Map of southern Ontario and northern New York State showing Aquaport location
44	Brief prepared by J. C. Crang entitled "The Unexplored Option"
45	Publication entitled "Offshore Airport Concepts"
46	Brief of Town Planning Institute of Canada, July 1972
47	Map entitled "Size and Effects on Toronto of Proposed 2'nd Airport and Cedarwood Development"
48	"The Third London Airport - The Process of Decision" article by Prof. D. Keith-Lucas, Canadian Aeronautics and Space Journal, January 1972
49	Regional Airport System Study of the Association of Bay Area Governments
49a	Association of Bay Area Governments publication "Aviation Future"

EXHIBIT IV (cont'd)

Exhibit No.	Title
50	Report dated October 1971 entitled "Participation and Liberal Democratic Government"
51	"Towards a new Urban Politics" by Dr. N. Harvey Lithwick
52	Metropolitan Toronto Transportation Plan Review Public Participation Program
53	Memorandum to W. Wronski, Metro Commissioner of Planning
54	Notice of Objections of Trans-Canada Pipelines Limited
55	Sketch Map showing location of pipeline and meter station
56	Brief prepared by J.M. Duggan
57	Document entitled "A Further Note on the Need for a Second Toronto Airport-Appendix 3"
58	Notes prepared by Mr. Green
59	Brief of Warchester Investments Ltd. together with survey
60 60a 61	Map outlining Regional Municipality of York Submission from Regional Municipality of York Minute No. 58 and No. 189 of the Council of the Regional Municipality of York
62	Document headed "Town of Whitchurch-Stouffville Zoning By-Law" January 1972
63	Two page article from Toronto Daily Star of February 20, 1971, headed "Orangeville Area Favoured by Ottawa for new Airport".
64	Acknowledgement of receipt of Objection of Regional Corporation of York dated November 6, 1972
65	Notice of Intention to Expropriate Whitchurch-Stouffville
66	Notice of Intention to Expropriate in Townships of Pickering and Uxbridge

EXHIBIT IV (cont'd)

Exhibit No.	Title
67	Document entitled "Opinions Proposed-Toronto II Airport-Survey of Toronto Area Candidates for the Federal Election"
68	Paper entitled "Proposed Pickering Airport-Opinions of Toronto Area MP's Elected October 30, 1972"
69	Submission of Miss Ellen Adams
70	Article by Captain Desmarais
71	Brief of Richard James
72	Written submission of Mr. Brian Buckles, "Why Expropriation Now?"
73	Photograph of the Miller House
74	Submission of Mrs. Kathleen Strike
75	Letter from the Secretary of Board of Trustees of the Brunswick Cemetery
76	Letter of H and Y Developments Ltd., Felray Investments Ltd., undated addressed to Right Hon. Mr. Trudeau
77	Letter of Objection from Mr. H. A. Harcourt dated December 6, 1972
78	Statement of Mr. Mitchell
79	Circular from egg-laying contest in Montreal in 1938
80	Submission by Mr. Ritchie with attachments
81	Judge Terence Moore's brief, together with the exhibits attached thereto
82	Submission by Thelma Robinson, four pages undated
83	Submission by Mr. Terry H. Erhart, two pages dated October 30 1972
84	Letter from Mr. P.W.J. Mingay to Mr. J.W. Swackhamer dated December 7, 1972
85	Two letters from the Douglas Page family dated November 20, 1972

EXHIBIT IV (cont'd)

Exhibit No.	Title
86	Letter from Mr. and Mrs. Harold Lewis, with attachments
87	Commentary by Mr. Allen R. Graham to slide presentation

**Some discrepancies exist between the exhibits as noted in the verbatim Hearing Testimony and the actual exhibits returned to the Ministry of Transport by the Hearing Officer. Exhibits marked ** have not been identified at the present time, but will be deposited if they become available.

EXHIBIT V

Other Relevant Documentation Available to the Government of Canada in Reaching its Decision

Document Number	Title
✓ A 1	Toronto International Airport (Malton) Systems Analysis - (ORD65), November 1965
✓ A 2	Forecasts of General Aviation for the Toronto Region, January 1973
A 3	Aerodrome Standards, Physical Characteristics and Zoning Requirements, December 1973
A 4	Land Use Dynamics: The Toronto II Airport Study, July 1972
✓ A 5	Design for Development: The Toronto-Centred Region May 1970
✓ A 6	Design for Development: A Status Report on the Toronto-Centred Region, August 1970
A 7	Annex of Understanding agreed by the Government of Canada and the Government of Ontario, March 1, 1972
A 8	Toronto Commuter Rail Study, November 1972
A 9	Expansion of Aviation Systems for Toronto and Southwestern Ontario: Ministry of Transport Releases, March 2, 1972
✓ A 10	Government of Ontario Releases, March 2, 1972
✓ A 11	Revolving Fund Authority, January 1970, March 1971
A 12	Compilation of records of Public Support for the New Airport
✓ A 13	House of Commons Debates: Official Report Tuesday January 30, 1973
	Statement by The Honourable Jean-Eudes Dubé, Minister of Public Works, to the House of Commons. (page 765)
	Statement by Transport Minister Jean Marchand on "The Site Selection for a Second Toronto-Centred Region International Airport". (page 812)

EXHIBIT V (cont'd)

<u>Document Number</u>	<u>Title</u>
✓A 14	Summary Report: Planning of T.I.A. Malton, December 1973.
A 15	Report on Preliminary Investigation of Bird Populations and Movements Affecting the Proposed New Toronto Airport Site, September/December, 1972.
A 16	A Study of the Toronto Island Airport to Determine its Potential as a Civil Aviation Airport and its Potential for STOL Operations, (No. 168), July 1972
A 17	Climate of the Pickering Airport Site, September 1972
A 18	Urban/Regional Impact of Airport Development Report I: Calibration of the Empiric Growth Allocation Model, September 1972
A 19	Passenger Distribution and Airport Assignment Study Phase II Stage 2 Airport Roles, April 1972
A 20	Brief Opposing Expansion of Toronto International Airport, December 13, 1968.
A 21	An Urban Transportation Policy for Ontario, November 22, 1972. Statement by Hon. William G. Davis Premier of Ontario.
A 22	Federal Aviation Regulations, Volume III. Part 36, Noise Standards: Aircraft Type Certification, December 1, 1969.

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APPENDIX A

Exhibit V (continued)

- A23 A Quiet Alternative Airport Plan, 1972, The
De Havilland Aircraft Company of Canada Ltd.
- A24 Evaluation of STOLport Locations in Greater
Toronto, April 1972
- A25 The Effects of Introducing STOL Service on Malton
Development, May 1972
- A26 STOLport Site Evaluation, Toronto, Ontario,
Report S-71-18, Ottawa, September 1972
- A27 An Assessment of STOL Technology, July 1970 (CTC 1970)
- ✓ A28 Analysis of "A Quiet Alternative Airport Plan",
1972

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APPENDIX B

Appendix B lists source documents and relevant information that have become available since January 30, 1973, and which are relevant to topics II 1(b) through (d) of the Practice and Procedure.

Some documents listed in Appendix B also have considerable relevance to Part III of this written summary, which relates to topics II 2(a) through (h) of the Practice and Procedure of the Airport Inquiry Commission.

<u>Document Number</u>	<u>Title</u>
✓ B 1	Summary of Forecasts, December 1973
✓ B 2	An Energy Policy for Canada: Phase I Volume I Analysis Volume II Appendices Issued under the authority of the Minister of Energy, Mines & Resources, Government of Canada, 1973
✓ B 3	Oil: The Present Situation and Future Prospects, Organization for Economic Co-operation and Development, 1973
✓ B 4	House of Commons Debates: Official Report Thursday, December 6, 1973 Statement by The Honourable Pierre E. Trudeau, Prime Minister (pages 8478-9)
✓ B 5	Aircraft Movement Forecasts - Update April 1973
B 6	Revised Air Freight Movement Forecasts 1970-2000, April 1973
B 7	Air Traffic Control Circular Letter 6-3-P310-73, October 25, 1973
B 8	Population Affected by Aircraft Noise - TIA Malton and NTIA Pickering, December 1973
B 9	Income Distributions by Size in Canada, 1971

APPENDIX B (cont'd)

Document Number	Title
B 10	Environmental Considerations of Airport Construction, January 1974
✓ B 11	New Toronto International Airport - Present Land Use, 1972/73 Crop Surveys, September, 1973
✓ B 12	Waste Management Report, February, 1973
✓ B 13	Report on Field Trip to Hanlon Creek Sedimentation Ponds, April, 1973
B 14	Preliminary Report on Aggregates and Materials, November, 1973
✓ B 15	Surface Water Monitoring Programme, October, 1973
✓ B 16	The Impact of NTIA Pickering on the Toronto Region, December, 1973
✓ B 17	Preliminary Plan Showing Restrictions on EHV Power Lines and Stations, NTIA (drawing), March, 1973
B 18	County Road 5 Relocation Status, June, 1973
✓ B 19	Airspace Organization and Management in the Two Airport System, N.T.I.A. Pickering and T.I.A. Malton, December, 1973
B 20	Feasibility of STOL Operations at Toronto Island Airport, October, 1973
✓ B 21	Preliminary Drainage Study, March, 1973
✓ B 22	Environmental Terrain Study
✓ B 23	Settlement Studies, February, 1973
✓ B 24	Snow Control Studies for NTIA, October, 1973
✓ B 25	Cost Projections to the Year 2000, T.I.A. Malton and N.T.I.A. Pickering, October, 1973
✓ B 26	Article from the Globe and Mail, December 29, 1973
✓ B 27	Opinion of Market Value of 3863 Acres of Land, Town of Mississauga, Malton Airport, July 1973
✓ B 28	Flight Information Manual 1973

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APPENDIX B (continued)

- B29 A Review of STOL Forecasts for the Toronto Region,
January 1974
- B30 STOL Patronage Forecasts for the Toronto Region,
February 1973
- B31 Toronto Island STOLport Preliminary Master Plan,
September 1973
- / B32 A Plan to Introduce Quiet STOL Transportation in
Canada 1974-1977 - Supporting Data, De Havilland
Aircraft Company of Canada Ltd., DHC Report
OA-172, Issue 2, October 1973 (DHC 1973)
- / B33 Noise Measurement Project - Malton - 1973

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APPENDIX B (continued)

- B34 Noise Exposure Forecasts for Toronto International Airport, Malton and New Toronto International Airport, Pickering 1971-1985, February 1974
- / B35 Hourly Runway System Capacities for Airport Planning, February 1974
- B36 Community Effects of Aircraft Operations, February 1974
- B37 Prediction of Number of Highly Annoyed Residents Within NEF 28 Contours for Various Roles of N.T.I.A. Pickering and T.I.A. Malton, February 1974
- B38 Longitudinal Trends in Community Response to Aircraft Noise, February 1974
- / B39 Peak Hour Analysis, February 1974
- / B40 Forecasts of Year 2000 Toronto Airports System Groundside Travel Demands for Scenario H; December 1973
- / B41 Appraisal of the Aircraft Sound Description System (A.S.D.S.), January 1974

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APPENDIX B (continued)

- B42 A Background Noise Study in the Vicinity of the Proposed New Toronto Airport, December 1973
- B43 The Impact of N.T.I.A. Pickering on the Toronto Region, Progress Report and Update, March 1974
- B44 Understanding the Urban Process: The Empiric Growth Allocation Model, May 1973
- B45 Runway Concept Evaluation, Feb. 1974
- B46 Executive Report on Bird Populations and Movements Associated with the Proposed Site of the New Toronto International Airport, March 1974
- B47 Preliminary Edition, An Ecological Study of the North Pickering Community Development Area and Toronto II Airport Site, March 1974
- B48 Agriculture and the New Toronto International Airport: An Introductory Analysis, March 1974

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APPENDIX B (continued)

- B49 Utilities for the Proposed New Toronto International Airport, March 1974
- B50 Potential Sites for VHF Omni Range Navigational Aid Facility at the New Toronto International Airport, March 1974
- B51 Potential Sites for a Radar Facility at the New Toronto International Airport, March 1974
- B52 Employee Shift Analysis and Employee Movement Forecasts, March 1974
- B53 Preliminary Plan Showing Restrictions on EHV Power Lines and Stations, NTIA, March 1974
- B54 Supplement to Document B34: The Effect of Curved Departures on Noise Exposure Forecasts, NTIA Pickering, March 1974

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APPENDIX B (continued)

- / B55 Originating-Terminating Passenger Forecasts for the
 Toronto Airports System, Volumes I and II,
 March 1974
- B56 N.T.I.A. - A Study of Road Access for 1980,
 March 1974
- / B57 1972 Passenger Survey,
 March 1974
- B58 Air Cargo Forecast Update (Interim),
 February 1974
- B59 Southwestern Ontario Airport Forecast of Total
 Demand and Airport Patronage,
 April 1974
- / B60 Financial Planning Model Estimates to Year 2000
 Based on Peak Hour Factor,
 March 1974

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APPENDIX B (Cont'd)

- B61 Aircraft Engine Noise Reduction Program,
 April 1974
- ✓ B62 Operational Procedures Designed to Reduce
 the Impact of Aircraft Noise on Areas in the
 Vicinity of Airports,
 April 1974
- B63 Aircraft Technology for Civil Aviation,
 July 1973
- ✓ B64 Introduction of JETS - Joint Enroute Terminal
 System,
 April 1973
- ✓ B65 Summary of Airport Roles and Traffic Assignment,
 Toronto Area Airports,
 May 1974
- ✓ B66 New Toronto International Airport Opening Date,
 Summary Schedule,
 May 1974

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APPENDIX B (Cont'd)

- ✓ B67 A Review of Modal Split Experience
 in Airport Ground Access Planning,
 May 1974

- ✓ B68 Off-Site Terminal and Transit
 Systems, First Stage Evaluation,
 May 1974

- ✓ B69 Report to Metro Centre Transportation
 Task Force on Airport Passenger Demand
 and Metro Centre Remote Processing
 Facilities
 October 1973

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May 17, 1974

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APPENDIX C

Much of the material pertinent to a determination of the role of N.T.I.A. Pickering, and the type and timing of the facilities, has already been listed under Appendix B. Appendix C includes information not listed in Appendix B. The list of references for Part III provides cross-references to documents listed in both Appendices B and C as appropriate.

Document Number	Title
C 1	Land Use in the Vicinity of Airports, revised 1972
C 2	New Housing and Airport Noise: A Supplement to the Site Planning Handbook by CMHC, revised 1972
C 3	Noise Exposure Forecasts: Evolution, Evaluation, Extensions and Land Use Interpretations, August 1970
C 4	Noise Source Abatement Technology and Cost Analysis Including Retrofitting, July 1973
C 5	Minutes of Proceedings and Evidence of the Standing Committee on Transport and Communications, Issue No. 5, Tuesday April 17, 1973.
C 6	NTIA - Initial Stage of First Phase Development Schedule, April 1973
C 7	Centralized Versus Decentralized Chilled Water Generation, September 1973
C 8	Central Engineering Data and Control System, October 1973
C 9	Heat Recovery Systems, November 1973
C 10	Primary Energy Sources and Energy Transformation, October 1973
C 11	Total Energy Concept - Evaluation Considerations, November 1973
C 12	Heat Energy Saving by Night Set-back of Room Thermostats, November 1973
C 13	Heat Conservation by Shutting Down Fans, November 1973

APPENDIX C (cont'd)

Document Number	Title
C 14	<p>Phase I: Preliminary Master Planning Passenger Terminal Facility, N.T.I.A. Consists of seven working documents:</p> <ol style="list-style-type: none">1) Introduction and Outline of Work Program, July 18, 19722) Level I Operational Concepts, July 18, 19723) Objectives, Criteria and Preliminary Standards, April 30, 19734) Some Basic Considerations for the Development of Passenger Terminal Alternatives, April 26, 19735) First Estimate of Gate Requirements for Toronto II, October 31, 19726) Alternative Passenger Terminal Concepts, November 23, 19727) Summary of Phase I, July 12, 1973
C 15	<p>Employee Shift Analysis and Employee Movement Forecasts, September 1973</p>

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APPENDIX D

- D1 "Vancouver General Aviation Study", Aviation Planning and Research Division, Civil Aeronautics, Ministry of Transport, December 1971
- D2 "Winnipeg International Airport Master Plan", Sections on General Aviation, R. Dixon Speas Associates of Canada Ltd., November 1968
- D3 Advisory Circular No. 150/5040-1A, U.S. Department of Transportation, Federal Aviation Agency
- D4 Linear Graph Applications in Transport Systems Analysis, by P. M. Pearson
- D5 Community Reaction to Airport Noise, by TRACOR, Inc., NASA CR-1761, July 1971
- D6 Community Reaction to Airport Noise-Dorval, Volumes I and II, 1972
- D7 Effective Perceived Noise Level Evaluated for STOL and Other Aircraft Sounds, by Wyle Laboratories for the Federal Aviation Administration, U.S.A., May 1970

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NEW TORONTO INTERNATIONAL AIRPORT, PICKERING:
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EXHIBIT I
TO
APPENDIX A

REPORTS AND INFORMATION RELATING TO THE
NEW TORONTO AIRPORT

The information originally available in two separate appendices has been combined into one index for reference purposes.

This material relates to question 1 through 18 as listed in the enclosure to the letter from Mr. J. J. Robinette to Mr. Jamieson dated May 25, 1972.

REPORTS AND INFORMATION RELATING TO THE
NEW TORONTO AIRPORT

QUESTION 1:

All reports and information since 1967 which have any bearing on the need for a second airport.

The Government of Canada acquired Malton Airport in the late 1930's. The airport continued in use, with minor expansion, until the mid-1950's. At that time a major development program was commenced, including the construction of major runways suitable for jet aircraft operations and the construction of the terminal building now referred to as Terminal No. 1, generally in accordance with the Master Plan prepared by John B. Parkin Associates. This Master Plan envisioned an ultimate expansion of the Malton Airport to an approximate capacity equivalent to some 14 million annual passengers.

By the mid-1960's, the Ministry of Transport (then referred to as Department of Transport) recognized that the volume of air transport activities was increasing at a much greater rate than had been forecast. The Ministry undertook an examination of the long-range growth in air transport over a 20-year period to the mid-1980's and the preparation of a plan for the development of facilities to accommodate the forecast growth. This Plan was prepared by John B. Parkin Associates principally during 1967 and is fully described in the report attached as Document 1.1.

Highlights of 1967 Plan

The examination indicated that air traffic would reach approximately 20 million passengers by the mid-1980's, that air cargo would increase even more dramatically, and that the number of aircraft movements would expand. The increase in aircraft movements would, however, be less than the commensurate increase in passenger activity owing to the introduction of the wide-bodied B-747's and tri-jets commencing in the early 1970's.

A great number of alternatives were examined to accommodate this growth at Malton Airport. All of the alternatives called for acquisition of some 2,000 to 3,000 acres of land in addition to the full development of the existing 4,200 acres within the Malton airport boundary.

The study made it clear that the increase in flight activity would cause very significant expansion of the area of land and the numbers of people that would be exposed to the negative effects of aircraft flight operations such as noise.

As a result it was recommended that the expansion be undertaken only on the condition that the Government of Canada working jointly with the Government of Ontario ensure that the use and the future development of adjacent land be compatible with the effects of flight operations. The study also concluded that access to Malton Airport would be an increasing problem, particularly were all of the airport development continued to be concentrated at one side of the airport. Accordingly, for this and other reasons it was recommended that a new terminal area be developed to the west of the existing 14-32 runway.

Public Dialogue on 1967 Plan

The Government of Canada announced the Plan during 1968. Discussions were held with officials of the Government of Ontario and the Municipality of Metropolitan Toronto as well as municipalities adjacent to Malton Airport. Strong objections were raised to the Plan from individual citizens' groups as well as from the municipalities. Arguments were raised opposing the acquisition of the additional land as being inconsistent with the existing planned and programmed investments in services by the municipalities for the use of this land for other urban purposes. Opposition was also voiced to the vast increase in land area and numbers of people that would be exposed to flight operations.

Rejection of 1967 Plan

In December of 1968 the Government of Canada announced that it would not proceed with the full-scale expansion of Malton Airport to accommodate the traffic of the mid-1980's and beyond. It was announced at that time that the Government of Canada would undertake examination of other alternatives including the development of a second major airport for Toronto. At the same time interim expansion to accommodate the traffic of the 1970's was initiated at Malton Airport.

During the course of this public discussion a summary document was prepared by the Ministry of Transport for information purposes, and is attached as Document 1.2. This document also illustrates a possible alternative development which would require the acquisition of only 1,000 acres of land, but which did not include provision for requirements beyond 1985.

Initiation of Planning of the Aviation System

In early 1969 the Ministry of Transport organized the Toronto Airports Planning Team. Document 1.3, "Outline Conceptual Plan, Toronto International Airport", describes proposed interim development at Malton. Document 1.4 briefly describes the work to be undertaken to locate an airport to serve the Toronto area. It is to be noted that in Document 1.3 reference is made to the need for a new airport with only four runways.

Need for a New Major Airport

By mid-1969 the Planning Team had investigated in a preliminary fashion only the implications of the development of a new international airport and the impact of various opening dates of the new airport on the additional facilities required at Malton, and the resultant total expenditures. A progress report was prepared dated May 1969 and is attached as Document 1.5. This report concluded that the new international airport was required to serve the Toronto-Centred Region and that the least-cost solution was to have the new airport operational as early as possible.

Preliminary Identification of Possible Sites

The federal Planning Team identified four broad zones of possible sites in all directions from Metropolitan Toronto--north, east (including northeast), west (including southwest) and northwest. These broad areas included the site ultimately selected in North Pickering. Within these broad zones, sites were identified according to the criteria for preliminary planning of the airport layout as outlined in the working report dated October 27, 1969, attached as Document 1.6. It is to be noted that it was estimated that four runways would provide more than adequate capacity to meet projected demand. However, an ultimate development of six runways was assumed so as to be even more conservative.

The sites for the six-runway airport were gradually reduced in number by reference to various other criteria such as airspace safety, noise in relation to urban areas, physiographic conditions and others, to a total of nine sites. To ensure that each of the four zones were considered, it was necessary to re-introduce sites that had already been eliminated in the reduction to nine.

Participation by Provincial Officials

By mid-1969 arrangements had been made for provincial officials to join in the examination of the alternate sites for the new Toronto airport. Even at this early stage, provincial officials indicated the importance of a site generally east of Metropolitan Toronto in relation to the development objectives emerging from the ongoing Toronto-Centred Region planning effort.

Detailed Investigations for Four Sites

The federal and provincial officials in turn identified a number of specific aspects to be investigated in relation to each of the four sites. These investigations conducted over the period to spring, 1970, included analyses of ground transportation access to the airports, ecology, the occupation and use of adjacent land, and airspace compatibility. (Documents reporting on these various investigations are included with the body of this material under question 13 following.)

In addition, the Planning Team prepared revised forecasts of the aviation activity to the year 2000. These forecasts indicated that the total volume of activity would likely exceed 60 million passengers annually by the year 2000.

Advisory Review

During the period of late 1969 to approximately mid-1970 the Department continually reviewed the progress of the Planning Team's work, including soliciting the advice of experts from outside the government.

As part of this approach, in April of 1970 a review was commissioned by the Department of all the work that had been undertaken by the Planning Team to date. This review resulted in the report attached as Document 1.7 dated May 11, 1970. The conclusion of this review was that extensive and detailed efforts had been made in examining where to develop a new airport, but that insufficient time had been spent on

the more fundamental aspect of what aviation system should be developed. A program of work was recommended in this review including the identification of some five or six aviation systems which should be examined.

Examination of Alternate Aviation Systems

From the period May to October 1970, a range of alternate aviation systems was examined. The alternatives were examined by sections of the Planning Team and by the outside experts.

Malton Reconfiguration

One section of the Planning Team intensively examined the possibility of accommodating more traffic at Malton Airport, without expanding the physical boundaries of that airport while limiting the additional amount of noise and other negative effects of aircraft flight operations. It was assumed that various technological developments might occur during the 1970's and 1980's which would enable the additional runway capacity to be provided with the addition of a fourth air carrier runway close to the existing 14-32 runway. This fourth runway was to be located only some 3,500 feet away from the existing 14-32 runway. Flight operation patterns were suggested which would seek to keep to a minimum additional areas exposed to noise, requiring the use of curved approach and departure flight paths*. These possibilities and the expansion of Malton, with these technological possibilities in mind, were first described in Document 1.8 attached, being a position paper produced by this section in May of 1970.

Part of the Planning Team continued work on Malton from May through to August of 1970, during which period the recommended separation of the two runways in the 14-32 direction was further reduced to only 1,000 feet. These efforts were summarized in Document 1.9 attached, being a further position paper dated August 1970.

*The curved flight paths suggested are unacceptable to the Ministry of Transport on grounds of safety.

In August 1970, one of the outside experts was asked to review the August 1970 position paper (Document 1.9). This review raised some fundamental issues, questioned the validity of the approaches assumed relating to noise around Malton, and argued strongly that a new airport would be required to handle the demands, both projected and unforeseen. The review, dated August 17, is attached as Document 1.10.

September 1970 Report

The Planning Team reviewed and modified the work on which the August 1970 position paper was based, particularly as related to the feasibility and social implications of expanding Malton Airport. This revised work was summarized in a report dated September 1970, and is attached as Document 1.11.

Strategic Planning Assignments

In parallel with the work described above, a consultant firm undertook two strategic planning assignments--the first dealing with the relationship of aviation systems to other broad policies and programs of the public and private sectors, and the second dealing with the financial implications of these alternate strategic plans. Each of these assignments resulted in a summary letter report and a technical appendix. These are attached as Documents 1.12, 1.13, 1.14 and 1.15.

The first strategic planning assignment was completed during August 1970 and summarized in the letter report of September 8, 1970, being Document 1.12. This report reviewed all of the alternative aviation systems that might be considered, particularly those relating to the reconfiguration of Malton, and the technical assumptions on which the conclusions reached in these studies were based. It stated that only with completely effective noise abatement could Malton Airport be further expanded to accommodate all of the future traffic in a manner compatible with community development. It concluded that this environmental condition was unlikely to be realized.

The report also concluded that other technologies could assist in alleviating the situation at Malton, and specific reference was made to STOL, high-speed ground transport, and the development of a series of metroports or regional airports as part of a multi-airport system. The main conclusion of the report was that all of these technological developments would not offload enough traffic from Malton to make expansion a feasible solution for the remainder. Therefore, it was concluded that land should be reserved for a major new airport and that this should ideally be located at a site which could also serve as one of the regional airports.

Both the review dated August 17 and this planning work undertaken by the consulting firm also suggested major weaknesses in the logic and in technological assumptions of the August 1970 position paper (Document 1.9) and these doubts were supported by the Minister who did not accept the recommendations of the August 1970 document. Some of these issues are discussed in the paragraphs following and other issues are referred to in the answer to question 4 dealing with the capacity of Malton Airport.

The members of the Planning Team had taken a very broad overview approach to examining the alternative airport systems and, as stated in the August 1970 paper, had sacrificed detail in order to quickly make this overall review. Unfortunately this approach resulted in major errors in some of the work, for example:

- The costs for the airport development were understated by an order of magnitude of 2. This is borne out by subsequent work prepared on a much more detailed basis and summarized in the report "Financial Planning Report One, July 1971" supplied as Document 1.18 and referred to below. This clearly demonstrated that the major error was in the understatement of terminal costs and the number of terminals required. It was shown that terminal and related apron construction would represent some 85% of the development costs of the new airport or the expansion of Malton, and insofar as the same amount of additional terminals were required whether a new airport or Malton or a series of airports were developed, the overall airport development costs would be virtually the same for all alternatives.

- / The August 1970 report recorded that the land adjacent to Malton Airport which would be exposed to the effects of aircraft flight operations to the 100 CNR contour was worth some \$700 million, assumed that only 10% of homeowners would accept an offer based on market value for their homes, and also assumed that these could be resold for 90% of their cost to the Federal Government. This approach was severely criticized by provincial officials who correctly stated that where residential land use is incompatible with the effects of aircraft flight operations, the homes should not be resold but alternate uses developed for the land. The results would be a loss in the existing investments in the home structures representing perhaps one-half of the \$700 million or a sum of \$350 million against the Malton alternative, as compared to the figure of \$7 million actually debited to Malton. It is to be pointed out that in the case of the new Toronto Airport the Government of Canada has recognized a concern and financial responsibility to the 95 CNR contour or equivalent. If applied to Malton this would more than treble the number of properties involved.
- In addition, technological possibilities were assumed as though they had already been achieved to support the claim that Malton Airport without additional land and without increased exposure of adjacent land to noise could accommodate all the traffic to the year 2000. Subsequent work clearly pointed out that the earlier and more detailed investigations of Parkin in 1967 and of the Ministry at that time were more correct in stating that additional land would be required. This land is necessary particularly to accommodate the correct number of passenger terminals and areas for aircraft parking on the ground (which had been understated in this work both in terms of costs and size) and to properly accommodate a fourth major air carrier runway to provide the necessary capacity in the 14-32 direction without in any way compromising safety.

Presentation to the Minister

All of these documents were combined into a presentation to the Minister of Transport, outlining the various alternatives. It was decided that the aviation plan should ideally consist of land for a major new airport, continued use of Malton Airport, and the development of regional airports.

It was determined that consideration should be given to increasing the number of international airlines serving Ontario, to the development and improvement of additional regional airports throughout Ontario, and to the continued pursuit of other technological developments such as STOL, high-speed ground transport, etc.

However, problems were identified with each of the four sites, rendering a selection premature at that time. In fact, the site to the north was eliminated from further consideration by mutual agreement with Ontario because of environmental disruption. Airspace problems were identified with the site to the west; weather problems were identified with the site to the north-west; and it was agreed that the site to the east suffered both from very inconvenient access and from weather problems.

These decisions by the Minister and the consequent discussions with provincial officials and other parties are recorded in Document 1.14 attached, being the letter report on the second strategic planning assignment.

Decision by the Government of Canada

The Minister of Transport directed that a document be prepared to describe the alternatives and record his conclusions. He subsequently submitted this to the Cabinet of the Government and received Government concurrence to this approach with no site being selected at that time for the land for the new airport.

Discussions with the Government of Ontario

The Minister of Transport met with the Prime Minister John Robarts and certain members of his Cabinet, and informed them of the developments indicated above.

Public Dialogue

In accordance with the Cabinet decision the Minister of Transport sought means to involve the public in reviewing the four zones for sites which had been examined as possible locations for securing land for a major new airport. Extensive discussions held with the Government of Ontario and the Department of Justice of the Government of Canada concluded that land at four sites could not be simultaneously frozen as this would result in hardship to people in a total area of some 300,000 to 350,000 acres. Accordingly, it was decided that a site must be first selected and then the alternatives exposed to the public and their comments on the decision and the alternatives welcomed.

Further Investigations of Aviation Plan and Site for Airport

Accordingly, the Team continued to work closely with the provincial officials on both the alternative aviation plans and on the site for a new airport. The ongoing work on the aviation plan is outlined in the methodology described in the Document 1.16 attached, prepared in February 1971, which summarizes the steps in the work.

Impact of STOL

A specific examination was made based on extensive technical studies by the Ministry of Transport and the Canadian Transport Commission. Both the possibilities that STOL might obviate the need for the new airport, and might permit delaying the planning of its requirement, were considered. It took account of existing STOL vehicles, the development of larger turbo-prop vehicles and the possible development of jet STOL (referred to by some as second generation and by others as later generation STOL). This report is provided as Document 1.17 and demonstrates that STOL, if successful, could attract a new market of its own but would affect the timing of the requirements for the new airport by only a short and inconsequential period, at best.

Traffic Forecasts and Survey of Passengers

The traffic forecasts were consolidated and the previous forecasting work re-examined, resulting in a confirmation of the order of magnitude of projection of some 60 million passengers by the year 2000. The relevant reports are attached as Documents 2.6 and 2.7 in answer to question 2.

In addition, a survey of passenger travel habits was made at Malton Airport during the summer of 1971 to provide a more comprehensive data base for detailed planning and for further update of the forecasts. This is attached as Document 2.12 in reply to question 2.

Financial Analyses

Financial Planning Report One referred to above and attached as Document 1.18 was completed during the spring and summer of 1971 and is dated July 1971. This report demonstrates that the order of magnitude of airport development costs would be virtually the same whether Malton or a new airport were developed to accommodate the traffic, principally because major expenditure in the order of some 85% is for terminal buildings and related aprons, and the same amount of terminal is required whichever alternative is selected.

Distribution of Air Passengers

During the spring of 1971 a detailed investigation was made of a great variety of locations for short-haul airports to accommodate the short-haul travel demand in various combinations with Malton. This report is provided as Document 1.19 entitled "Air Passenger Distribution and Airport Assignment Study". The report clearly demonstrated for the first time that there is a significant and rapidly growing market of air passengers to the south-west, which is distinct from the air passenger market of Metropolitan Toronto. It recommended further study of South-western Ontario to determine the exact size and distribution of this market.

Combination of a New Major Airport and Regional Airports with Malton

The Toronto Area Airports Project team interpreted the work described in Document 1.19 and examined the advantages of locating the land reserve for a new major airport at a site which would also serve as a regional airport. The Team also studied the addition to the system of regional airports capable of expansion to accommodate international services. These studies led to the conclusion that in a multiple-airport system, the ultimate requirement at the new major airport even on the most conservative basis would not exceed four runways because a significant part of the traffic would be accommodated at Malton and the regional airports.

Accordingly, investigations were made into the areas of the original zones of possible sites to identify suitable locations for four-runway airports. Possible sites more convenient to Metropolitan Toronto and other urban areas, including those formerly eliminated on basis of size, were re-examined.

Two sites were identified that merited particular attention: a site to the southwest, near Peter's Corners; and a site to the northeast, the site ultimately selected. These sites were the subject of continuous study throughout the summer and fall of 1971, and a series of reports were produced. These are attached as Documents 1.20, 1.21 and 1.22.

The southwest site emerged to be especially convenient for the air passenger market in the southwestern part of the Toronto-Centred Region which was subsequently recognized as being part of the much larger latent market of the southwest Ontario region. The northeast is the closest possible site to Metropolitan Toronto because of Malton's location to the west and north of Metro and the need for adequate separation from Malton to ensure airspace safety.

Progress Report and Recommended Approach for Toronto Area Airports System - September 1971

In September 1971 a progress report was prepared outlining the recommended approach of a multiple-airport system including Malton and the northeast with the southwest site as well. This progress report is provided as Document 1.23 attached, and showed that as the number of passengers using Malton decreased, the natural demand for traffic at the northeast site expanded to exceed that which would be attracted to the southwest site. At this time the southwest site was still seen as a possibility for the new Toronto airport, its role in relation to the southwest region not yet being fully appreciated. The report was presented to the Minister and he instructed that further consideration be given to the merits of providing airport systems specifically tailored to the needs of Toronto on the one hand and the southwest region on the other.

Further Analyses of Distributions of Passengers

Based on the detailed comprehensive information gathered during the survey of passengers at Malton in the summer of 1971, a further study was made of the distribution

of passengers and the possible roles of airports. This information is provided in Document 1.24 attached, entitled "Air Passenger Distribution and Airport Assignment Study, Stage 1 - Phase 2". This work was completed during the fall of 1971 and reaffirmed that the southwest site would in fact accommodate a special market of its own in the southwest region, and that the northeast site was the true alternate to Malton, being the closest and most convenient to Metropolitan Toronto.

Multiple-Airport System

As a result of this work, a multiple-airport system consisting of three airports was proposed. This system, described in Document 1.25, consisted of the northeast site which together with Malton would serve Metropolitan Toronto and environs, and the southwest airport to serve the independent southwestern market.

Further Financial Analyses

Financial Planning Report Two, attached as Document 1.26, extended the financial analyses completed for the original four sites (see Financial Planning Report One, being Document 1.18) to the south-west and north-east sites, and examined the financial viability of a three-airport system. It also showed that after 1983 the north-east would be more convenient to air passengers than the south-west.

Selection of Northeast Site

Discussions were held with the Government of Ontario and it was agreed that the north-east site merited selection as the location for land to be reserved for a second major airport for Metropolitan Toronto and its environs.

Provincial officials identified some special environmental problems associated with the south-west site which led to the merits of this development being questioned. In addition, it was recognized that the south-west site had yet to be proven to be the best site for South-western Ontario as it had been originally identified as a possible site for the new Toronto airport and might not be well centred for the southwest area.

It was therefore further agreed that a system of airports should be developed for Southwestern Ontario and that in the short term this should include an expansion of existing airports at Hamilton, at London and at Windsor. Continued joint efforts should be made on the long-range requirements of the traffic of that region possibly leading to the development of a more central major facility beyond the 1970's. All of these conclusions were summarized in the presentation provided as Document 1.27 attached and dated February 1972.

Announcement of Decision

This presentation, document 1.27, was the basis of a submission to the Cabinet which received the concurrence of the Government of Canada. This led subsequently to the Annex of Understanding between the Minister of Transport and the Treasurer and Minister of Economics and Intergovernmental Affairs of Ontario, the announcement of the new Toronto airport in the two respective Houses, and to the joint public presentation of these announcements.

QUESTION 2:

Information on passenger and movement forecasts for 1972-2000. These figures should be broken down by;

- all airports in the Toronto and southwestern Ontario area (and should also include Ste. Scholastique and Dorval)...
- local
- itinerant - private
- itinerant - schedule - domestic - transborder - other internationals...
- itinerant - charter
- itinerant - other commercial
- aircraft movements and passenger volume should be broken down for each airport to indicate peak daily movements and peak hour movements...
- average load factors should be shown for all the movements
- route distributions showing passenger and traffic movement volumes and type of aircraft used between Malton, Toronto II and all other major points in Canada, the United States, Caribbean and Mexico, South America, Europe and Asia...
- projections 1972-2000 showing the origination and final destination of all passengers who would use Malton and Toronto Airport II...
- projections 1972-2000 showing the reasons for the flight as designated business, pleasure; ages; income of users of airport services.

The following documents are attached:

2.1 Passenger and Cargo Forecasts including Methodology-
April 21, 1972

This is a summary document prepared by the team for public information.

2.2 Forecasting and the New Toronto Airport-June 30, 1972

This is a more detailed account of the forecasting process, with a more detailed description of the methodologies used in the four principal forecasts prepared to date.

2.3 Aircraft Movement Forecasts and the New Toronto Airport-
May 31, 1972

This is a semi-detailed account of the aircraft movement forecasts and methodology.

2.4 Air Transportation Statistics - Forecasts: Air Traffic Movements, Passengers, Cargo-December 1969

This document is the December 1969 Forecast referred to in documents 2.1 and 2.2 above and was developed by the Canadian Air Transportation Administration to provide an indication of expected traffic volumes at the 25 airports that, at that time, carried 90% of the total national passenger traffic. The growth rates developed for Toronto were subsequently applied to the 1969 statistics to obtain the "Revised Air Traffic Forecasts for the Toronto Region." (See 2.5 below).

This document also includes information relating to airports in Southwestern Ontario, and the Montreal Hub.

2.5 Air Statistics and Forecasts to be used by the Toronto Airport Planning Team-1970

This is a compilation of information relating to the September 1970 forecast and includes passengers, cargo and aircraft movements.

2.6 Review and Update of Existing Air Traffic Forecasts-March 1971

This study was made in January-February 1971 as part of the ongoing analysis of the aviation requirements of Southern Ontario. Appendix C contains forecasts used by the team during 1970, with corrections which are identified. It identifies the need for a new set of forecasts based on 1969 data collected by the Aviation Statistics Centre, and Growth Rates published by the Systems Planning Group-Air, CATA (see 2.2 above).

2.7 Revised Air Traffic Forecasts for the Toronto Region-May 1971

This volume constitutes the May 1971 forecast and was prepared as a result of the Review and Update (2.6 above). It also includes a set of forecasts, prepared in March 1971, of Aircraft Movements at the New Toronto Airport on the assumption that Malton would not be allowed to exceed the traffic levels reached in 1978, immediately prior to the assumed opening of the new Toronto airport. These were used for CNR calculations for the N-W site, which was used as an example in the study of adjacent land management (Land Management Report, July 1971).

2.8 O and D Statistics and Forecasts for Toronto Airport-February 1971

This is a special study prepared in February 1971 as input for the report "An Evaluation of the Impact of STOL on the Toronto Area Airports System" dated April 1971.

It is important to note that the passenger forecasts quoted in the study do not include passengers travelling by charter. Also, the growth rates for transborder traffic are conservative, and in the full forecast of May 1971 (document 2.7) were revised to conform with the figures developed in the Air Transportation Statistics-Forecasts study (document 2.4).

2.9 Revised Aircraft Movement Forecasts-November 1971

This is the November 1971 report referred to in the paper "Aircraft Movement Forecasts and the New Toronto Airport" (2.3 above).

It incorporates revisions to 2.4 (above) to extend forecasts of aircraft movements to 2000 and to take into account estimated increased role of wide-bodied aircraft.

2.10 A Comprehensive Survey of Passengers Flying From Toronto International Airport, May-June 1968

This document describes a survey conducted by the Institute of Aerospace Studies, University of Toronto, in 1968. The data contained in the report was made available to the Toronto Airports Project and used as input to the September 1970 forecasts and also to the report "An Evaluation of the Impact of STOL on the Toronto Area Airport System", April 1972.

2.11 Ground Transportation Travel Surveys-August 1969

Report describing the ground travel surveys undertaken in 1969 used to provide basic planning data related to the origins and destinations of passengers and cargo, trip purposes, parking requirements etc. The information was subsequently supplemented by 2.12 below.

2.12 Malton Survey and Measurement Project-January 1972

This project was carried out in August and September 1971, and analyzed during the fall of 1971. It provides an updated data base for passenger distribution and characteristics, also for greeters and wellwishers.

2.13 Air Passenger Forecasts-January 1972

This report relates to the January 1972 passenger forecasts referred to in documents 2.1 and 2.2 above. It reviews and validates origin-destination forecasts presently use. It also develops enplaned X 2 and arriving-departing forecasts based on start and end points of journeys, and tabulates results.

2.14 Aviation in Canada 1971-February 1972

This publication shows a projection of 21.5 million scheduled passengers for 1990 which is derived from document 2.4 above. As explained in the Errata Sheet, more comprehensive studies have resulted in a slightly increased projection of 23.6 million scheduled passengers for 1990. To this, must be added a projected 7.5 million charter passengers to reach the total of 31.1 million.

QUESTION 3:

Forecasts of air growth of cargo in tons over this period 1972-2000 as well as an assessment of cargo, plane sizes; the advantages and disadvantages of having separate cargo airports; and the need for air cargo ports to be close to the major population centres.

- *projections of the growth and demand should allow relationship between air cargo and other competitive transport modes;*
- *projections should show the origin and destination of the forecast air cargo tonnage;*
- *projections should show a breakdown of the cargo tonnage broadly by industry, demand and types of goods shipped.*

Documents Nos. 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.9, 2.11, 2.14 listed in answer to Question 2 are also relevant to this question. In addition, the following are attached:

3.1 A Framework for Air Cargo Forecasting, Toronto Region, 1970-2000, November 1971

This interim report describes the methodology used in the January 1972 Air Cargo Forecast referred to in the paper "Forecasting and the New Toronto Airport" - June 30, 1972.

3.2 Air Cargo Forecasts: The Toronto Region, 1970-2000, April 1972

This is the final report of the January 1972 Air Cargo forecast referred to on page 24 of the paper "Forecasting and the New Toronto Airport". It includes the full range of air cargo forecasts currently in use, together with a full description of the methodology used in their preparation. It is to be noted from the report that more than half of the forecast cargo will be carried in the under-floor compartments of passenger aircraft and hence cargo facilities must be closely related to passenger facilities.

QUESTION 4:

All reports and information on the physical capacity of Malton to handle additional aircraft movements. These reports should not only detail Malton's present capacity but should also outline possibilities for expansion which were considered after the Parkin report and which take into account improvements in air traffic control systems which alter reduced runway separation, the use of dual runways, lesser separation between aircraft movements, etc.

The question of the capacity of Malton to handle additional aircraft movements has been the subject of a number of reports and of ongoing investigation.

4.1 Flight Information Manual, 1972

This document contains pertinent Air Regulations and Amendments, and also pertinent Air Navigation Orders and Amendments. In the Air Regulations certain of the terms used in the answer to this question are explained. These include Instrument Flight Rules (IFR) and Visual Flight Rules (VFR). The numbers quoted in the various reports are predominantly IFR because the majority of air carrier operations at the major M.O.T. airports are conducted under Instrument Flight Rules (IFR) regardless of weather conditions.

4.2 Airport Capacity Handbook, Second Edition, June 1969

is a source reference used in many of these reports and investigations. This volume was prepared by the Airborne Instrument Laboratory (AIL) for the United States Federal Aviation Administration.

In the Master Plan Report - Toronto International Airport, already supplied as document 1.1, it was stated that runway 14-32 alone must be used for approximately 10.0% of the time. It simulated two runway usage patterns, all operations on runway 14-32, and a "swing operation" in which all aircraft landed on runway 14 and departed on one or both of the 05-23 runways.

Using a swing operation, and the existing radar separation standards, the IFR runway system capacity was estimated by simulation to be 66-70 movements per hour. This compares closely with a value of 74 obtained from the Airport Capacity Handbook.

The IFR capacity of runway 14-32, again using current radar separation, was shown as 42 movements per hour. These values compare closely with the results shown in document 4.4 (Case I) in which the capacity of runway 14-32 was calculated, using the Airport Capacity Handbook, to be 42 under IFR conditions. (Since the Master Plan Report was completed, the second 05-23 runway has been lengthened to air carrier standards, hence more efficient runway system usages are now available, with attendant greater capacities.)

4.3 Toronto Terminal Area System Capacity and Airport Location, January 1970

This document was prepared for the Ministry of Transport by R. Dixon Speas Associates of Canada Ltd. A simulation model was used to arrive at the hourly runway capacity values listed in the report and these figures were compared to demand as forecast by the contractor. Section 5.6 of the report lists the capacity of runway 14-32 as 38 movements per hour under IFR conditions. Assuming certain changes in aircraft handling procedures and additional turn-offs (some of which are now in use) the capacity would increase to 46 movements per hour.

(Actual statistics indicate that 45 movements per hour with the present mix of traffic can be accommodated before delay exceeds tolerable limits. It has been calculated in ongoing work that when the airport is operating as a single runway airport the capacity of runway 14-32 would be approximately 47 movements per hour, with aircraft separation of three miles.)

Document 4.3 concluded that the "capacity/demand analysis" indicated that even with improved procedures and operating conditions, there would be insufficient capacity prior to 1985 when Malton must be operated in the single runway condition (14-32).

4.4 Airport Capacity Analysis, Toronto International Airport, April 1970

This was undertaken to consider the existing capacity of the airport and to examine ways of increasing that capacity.

4.5 The Effect of Parallel Runway Separation on Airports Capacity, Toronto International Airport, August 1970

This studied the effect that spacing between parallel runways has on capacity. For this purpose it used values which reflect the use of improved landing aids not now available. It was also suggested that runway 14-32 alone must be used approximately 6.5% of the time.

Both of these reports used the "Airport Capacity Handbook, Second Edition", June 1969, to calculate airport capacities.

This assumption of improved landing aids is supported by the Airport Capacity Handbook (document 4.2) which points out that beyond 1975, runway capacities may be increased by the use of a Terminal Interval Computer (TIC) to sequence arrivals and departures. It also suggested that from the data published to January 1968, it was to be assumed that Jumbo Jets (wide-bodied) will behave similarly on the airport runway to such aircraft as the Boeing 707 and Douglas DC-8. On this basis a possible increase of capacity of about 10 movements to about 57 movements per hour is calculated, comprising 28.5 arrivals and 28.5 departures.

The actual effect of possible future improvements in ATC aircraft handling capability can only be determined when operational equipment is available. Also, the importance of operating experience is illustrated by a countervailing trend which results from experience gained since the wide-bodied aircraft (Boeing 747, DC-10, L-1011) became operational. This has shown that wake turbulence from heavy aircraft necessitates changes in ATC/operational procedures. For such aircraft (defined as those capable of a take-off weight of over 300,000 lbs.) separations between aircraft are increased from three to five miles, and this separation applies in both VFR and IFR conditions. The following Ministry of Transport documents are relevant:

4.6 Special Procedures for Handling Heavy Jets, July 1971;

4.1 Flight Information Manual, 1972.

This Canadian literature is paralleled by the following F.A.A. documents:

4.7 Procedures for Control of Aircraft Following Heavy Jet Aircraft, August 1971;

4.8 Heavy Jet Separation Criteria, July 1972.

On the basis of the information indicated above and the present and anticipated mix of heavy and light aircraft, the post-1975 capacity of 28.5 arrival movements per hour will be reduced. By the early 1980's the peak hour arrival demand is forecast to be 25-30 movements per hour, of which approximately two-thirds will be heavy aircraft.

On the basis of the analyses of weather conditions at Malton, it has been established that the single 14-32 runway must be used between 6.5% and 10.0% of the time and when such conditions occur in the peak hour in peak seasons, the runway is now operating near capacity. Under these circumstances, the construction of a major air carrier runway parallel to the existing 14-32 runway would have been undertaken in keeping with plans developed a number of years ago. In the light of the Government of Canada's decision not to proceed with a full expansion of the airport, however, such a runway will not be constructed. The delays which will result can be tolerated during the 1970's but they would increase to unacceptable levels during the 1980's if no additional runways are built at either Malton or the new airport.

QUESTION 5:

All reports and information on the feasibility of removing General Aviation Aircraft from Malton and the effect this could have on runway capacity.

The following information is attached:

5.1 General Aviation in Toronto and the New Toronto Airport - June 29, 1972

This is a summary document prepared for public information which indicates that the general aviation role played by Toronto International Airport (Malton) has already been reduced.

5.2 A Study of General Aviation in the Toronto Area - December, 1968

This study indicated that thirteen airports accounted for 96% of the general aviation movements in 1968. It records that a process of limiting general aviation training at Malton had already been carried out. The policy objective of encouraging general aviation activity to use airports other than Malton is noted.

5.3 ATC Study of Future General Aviation Airport Development in the Toronto Area - May, 1970

This study identified the general aviation airports which would be affected by the north, east, west and northwest sites for the new Toronto airport.

5.4 General Aviation Inventory - June, 1970

This document records the general aviation facilities at selected airports in Southern Ontario.

In addition it should be noted that:

- (1) Since approximately 1967, co-operative measures have been undertaken at Malton to ensure the bulk of airline training is conducted elsewhere. A small amount of airline training confined to off-peak periods remains at Malton.
- (2) In 1968 a directive was issued discouraging additional general aviation ground installations. This directive was, however, rescinded in 1969 when the decision was taken to plan for a new Toronto airport.
- (3) A "NOTAM" (Notice to Airmen) was issued some three years ago restricting special visual flight rules (SVFR) flights except helicopters.

QUESTION 6:

All reports and information on the effect administrative procedures such as higher landing fees both generally and more particularly at peak hours would have on Malton's capacity.

The following information is supplied:

6.1 Congressional Air Transportation Congestion Study -
January, 1971

This is a report ordered by the House of Representatives and directed by the U.S. Federal Aviation Administration (F.A.A.), in close collaboration with the Civil Aeronautics Board (C.A.B.). It notes that peaking is not only related to the scheduling of operations, but also as a result of weather and airport conditions, which are uncontrollable. It notes that an imposed quota system can be effective when demand exceeds capacity, but that this must be carefully planned to be equitable and is becoming increasingly difficult to administer as more individual airports become congested.

The F.A.A. conclusions favour higher fees in peak periods. However, the Administration finds that this is not a practical procedure under U.S. conditions where pricing policy is a prerogative of local airports. The C.A.B. notes in its conclusions that load factors in peak scheduled periods generally exceed those in non-peak scheduled periods, and concludes that there seems to be no load factor basis for carriers to cancel flights.

The report points out that expansion of existing facilities and the construction of new airports provide the long term solutions to congestion.

CONDITIONS AT TORONTO:

The difficulties of introducing administrative procedures in a situation where many of the airports involved are experiencing congestion are illustrated by the recent F.A.A. call to all airlines operating into the Chicago/New York/Washington triangle to co-operate to minimize airport congestion.

Traffic patterns at Toronto International Airport (Malton) are made extremely complicated by this congestion not only at airports in the United States but also at those in Europe. Much of the peaking problem at Toronto relates to international traffic. This type of traffic peaks very

heavily because it is subject to many constraints, such as curfews, time zone differences, and the travel habits between Europe and North America that limit flexibility in rescheduling flights.

The possibilities at Malton have been studied and the conclusions are recorded in three reports listed below:

6.2 Air Charter Operations and Airport Congestion
- September, 1970

This draft Interim Report notes that charter traffic at Toronto contributes to the peaks. It records that the following steps have been completed:

- (1) Major and minor modification of facilities;
- (2) Formation of a Utilization Committee comprising representatives of all resident groups (users and operators at the airport);
- (3) Formation of a Scheduling Committee consisting of airline and airport representatives, designed to influence scheduling of regular and charter flights.

6.3 Air Charter Operations and Terminal Congestion
- November, 1970

This report notes the study attached as Document 6.1 and draws attention to the fact that Canadian scheduling is inexorably linked to American patterns. It points out the need to protect the Canadian position by participation in global attempts to change air traffic patterns through IATA and other agencies.

The report examines possible approaches to improvements. It concludes that regulation is undesirable. Differential landing fees for peak and off-peak periods are rejected on the basis that they would discriminate against the scheduled carrier. Co-operative rescheduling was deemed to hold the greatest promise. In this connection the report noted that the Toronto Scheduling Committee and the Toronto Airport Utilization Committee are active in improving rescheduling and existing terminal systems facilities.

6.4 Terminal Congestion at Toronto International Airport
- December 1971

This report is pessimistic about the possibility of moving charter operations into off-peak periods, but expresses guarded optimism about the possibility of reducing congestion and achieving a great utilization of the airport's facilities.

It concludes that the Airport Scheduling Committee should be strengthened as the most reasonable and practical means of ensuring more efficient utilization.

With reference to recommendation (b) in this report, it should be noted that CATA/CTC liaison is maintained on a continuing basis.

In practice, it has been found that the most effective machinery is a Scheduling Office which has been set up by the Airport Manager, who is able to report increasing co-operation on the part of charter operators who realize that efforts to minimize congestion benefit them directly. Charters are not in any way regarded as "poor relations" -- indeed, several of the major airlines provide charter service. It is also relevant to note that the decrease in fare differential is reducing the differences between scheduled and charter operations.

QUESTION 7:

Access to all reports and information on the trend towards quieter aircraft like the L-1011, DC-10 and B747's will have on Malton residents.

The following information has already been provided:

13.3 Aircraft Noise and the New Toronto Airport - May 4, 1972

This document has already been supplied with respect to Question 13. It is relevant to this question in that it provides an explanation of methods used for estimating noise annoyance.

2.3 Aircraft Movement Forecasts and the New Toronto Airport - May 31, 1972

2.9 Revised Aircraft Movement Forecasts - November 1971

Documents 2.3 and 2.9 incorporate the aircraft movement forecasts used as the basis for the latest noise annoyance estimates. It will be noted that the proportion of wide-bodied aircraft increases steadily.

The following information is attached:

7.1 A Description of the CNR and NEF Systems for Estimating Aircraft Noise Annoyance - October 1971

This report provides a more detailed explanation of these methods of estimating noise annoyance. It shows that the CNR system is not sufficiently precise to permit the evaluation of increases in noise annoyance with incremental increases in air traffic, and describes the Noise Exposure Forecasting (NEF) system which has been developed to meet this need. It also points out that for purposes of establishing community response NEF may be related to CNR.

7.2 A Study of the Aircraft Noise Considerations, Toronto International Airport, with regard to Opening Date of Toronto II - May 1970

This report analyzes the effect of increasing air traffic in the period beyond 1975-76 on noise annoyance around Malton. It concludes that because the numbers of movements used to calculate the 1975-76 contours can be more than trebled without affecting the size of the contours, no shift in the contours is envisioned prior to 1985.

This conclusion illustrates the need for the NEF system which is capable of estimating the effects of steadily increasing numbers of aircraft movements.

7.3 Aircraft Noise Considerations, Toronto International
Airport, Malton 1971-1980 - September, 1972

This report records the correlation of the 30 NEF contours for Malton with the population as recorded by the 1971 census. The NEF contours were calculated by means of a computer programme which had been developed at the Institute of Aerospace Studies, University of Toronto, and subsequently updated by the Ministry of Transport.

The contours are based on the aircraft movement forecasts in document 2.9 above, and actual 1971 observed runway utilizations with all noise abatement procedures operational. The report shows that noise annoyance continues to build up beyond 1975/76, and that in 1978 some 61,000 people already in residence in 1971 would be exposed to more than 30 NEF. The report shows that the measure of relief provided by the opening of the new Toronto airport is very significant compared to that envisaged in document 7.2. By 1980, with only Charter, North European and Freighter traffic moved to the new Toronto airport, the number of people affected at Malton is reduced to 33,000.

QUESTION 8:

Access to all reports and information on the effect engine retrofits and engine redesign in the manner exemplified in the National Aeronautics and Space Administration's quiet engine programme would have on Malton residents. Such reports should also detail the economic and technical feasibility of such a programme.

The documents listed below are attached. They include recent published material and technical memoranda released by NASA.

- 8.1 "Economic Impact of Implementing Acoustically Treated Nacelle and Duct Configurations Applicable to Low Bypass Turbofan Engines", prepared for U.S. Federal Aviation Administration, Office of Noise Abatement, by Rohr Corp. - July 1970
- 8.2 "New Noise Regulations Possible for SSTs", Aviation Week and Space Technology - April 19, 1971
- 8.3 "Acoustical Retrofit Bill Stirs Controversy", Aviation Week and Space Technology - April, 1971
- 8.4 "NASA and FAA Argue Over Money for Quieter Engines", Aviation Daily - July 16, 1971
- 8.5 "Boeing, Douglas Outline Aircraft Noise Research Difficulties", Aviation Daily - July 16, 1971
- 8.6 "Flight Test Noise Measurement Results" chart - December 1, 1971
- 8.7 "Aircraft Noise in the 1980s", Tech Air - January, 1972
- 8.8 "Stop That Noise", Flight International - February 10, 1972
- 8.9 "Engine Noise Antidotes Weighed", Aviation Week and Space Technology - February 14, 1972
- 8.10 "Noise is Off", Flight International - March 23, 1972
- 8.11 "The NASA Quiet Engine Program", a NASA Technical Memorandum - March, 1972
- 8.12 "NASA Cites Jet Noise Reduction Gains", Aviation Week and Space Technology - April 19, 1972
- 8.13 "How Noisy are the Widebodies?", Aviation Daily - April, 1972
- 8.14 "Aircraft Noise", MOT U.K. newsletter
- 8.15 "Aircraft Noise - Quiet Engine Development and Retrofit": Remarks by the Associate Administrator, NASA - May 16, 1972

QUESTION 9:

All reports and information on the feasibility of delaying the opening date of a second airport until at least 1985.

The Master Plan for Malton prepared in 1967, already supplied as document 1.1, examined the alternative to constructing the new Toronto Airport in the time frame to 1985. The conclusions it reached and the reasons for the rejection of the plan have already been fully described in the answer to question 1. A summary Document 9.1, March 1972, which explains the constraints which limit the potential for the further development of existing facilities at Toronto International Airport (Malton) is attached.

Material which is relevant to this question has also been supplied in answer to other questions. Documents 4.1, 4.6 and 4.7, demonstrate that runway capacity has been significantly affected by the recognition of the effects of wake turbulence from heavy aircraft. Document 4.8, July 1972 suggests that even the limited expansion potential envisaged in Document 9.1 may have been overestimated.

Report 7.3 shows how the number of people affected by noise at Malton will increase in the period 1971-1978, and how this is expected to decrease after the opening of the new Toronto Airport. The answer to question 11 has shown that these figures will not be markedly affected by the development of STOL. Similarly, the answer to question 12 shows that High Speed Ground Transportation will not markedly contribute to the solution of the problems of noise annoyance.

Studies of how best to utilize the facilities at Malton are part of the on-going work related to the Toronto Area Airports System. The following information which has not been supplied elsewhere is attached:

9.2 Toronto International Airport: Recommended Runway Configuration, October 1968

This internal report suggests a reduced expansion of Malton as an alternative to that recommended in Document 1.1. It suggests that with a parallel 14-32 runway with a separation of 7,200 feet to be completed before 1972, runway capacity will meet forecast demand until at least 1985.

The following six documents are the reports on information used in the compilation of Document 1.9 already supplied:

9.3 Toronto International Airport Expansion, August, 1970

This report is an evaluation of a conceptual layout for the expansion of Malton based on the assumption that adequate runway capacity could be provided by developing a parallel to runway 14-32 at a separation of 1,000 feet. (Further analysis of capacity and runway separation criteria subsequently rendered this assumption questionable).

Document 9.3 has as accompaniments, documents 9.4, 9.5, 9.6, 9.7, 9.8 and 9.9.

9.4 Toronto International Airport (Malton) Road Access to 1990, November, 1970

9.5 Toronto International Airport (Malton) Ground Transportation to Year 2000, November, 1970

The information on which reports 9.4 and 9.5 are based has been superseded by more recent forecasts of passenger and cargo volumes as provided in the response to questions 2 and 3.

9.6 Ground Transportation Requirements for Infield Terminal, November, 1970

This report analyzes the ground transportation requirements of the infield terminal in the conceptual layout described in Document 9.3.

9.7 Preliminary Report, Water Supply and Waste Disposal Cistern, Toronto International Airport, August, 1970

This report describes water supply and waste disposal systems associated with the conceptual layout for the expansion of Malton described in Document 9.3.

9.8 Etobicoke Creek Realignment, July, 1970

This report examines the relocation of Etobicoke Creek required by the expansion of Malton in accordance with the conceptual layout described in Document 9.3. The creek is realigned approximately 1,000 feet outside the airport boundary, necessitating acquisition of land for this purpose.

9.9 Malton User Costs

This document consists of two letter reports dated May 15, and July 18, 1970 respectively. The information contained therein has been superseded by Document 13.29.

9.10 Capacity Forecast, TIA Malton, July 1971

This report estimates, approximately and on a preliminary basis, the ultimate capacity of Toronto International Airport, Malton, as dictated by the availability of land for development within the existing airport boundary. For this purpose it assumes that the necessary runway capacity could be provided by the existing runways plus an additional parallel 14-32 runway at a separation of 1,000 feet from the existing runway. As with document 9.3 subsequent work rendered this assumption questionable.

The author of the report expressed reservations about some of the other assumptions made at this time, particularly with respect to ground access facilities. This reservation has subsequently proved to be well founded, and the land requirements for ground access reduces and restricts the area available for the development of passenger and cargo facilities.

9.11 Working Report, Toronto International Airport Study, October 1967

This is the Ground Access Study which provided input to the Malton 1967 Master Plan already supplied as Document 1.1.

QUESTION 10:

All reports outlining the factors considered and the methodology used by the M.O.T. in arriving at passenger growth forecasts.

Information relating to forecasting methodology is incorporated in the reports which include the actual forecasts. Reference should be made to the material supplied in answer to questions 2 and 3.

QUESTION 11:

All reports and information on the technical and economic feasibility of STOL. These reports should project the number of passengers carried by STOL in the future and the affect this would have on Malton's capacity and on noise to nearby residents.

Documents (1.17 and 1.19) are relevant to this question.

In the context of STOL the following comments are relevant:

1.17 An Evaluation of the Impact of STOL on the Toronto Area Airports System - April 1971

This Toronto Area Airports Project Report demonstrates that the principal benefits of STOL depend on the development of later generation jet STOL aircraft. Considerable benefits in terms of time savings are forecast providing that savings in time spent in the terminals can be achieved. Notwithstanding the possible delay in constructing a new Toronto airport resulting from the diversion of traffic from Malton is seen as only 1-2 years.

The subsequent report referred to in the covering Memorandum is the Air Passenger Distribution and Airport Assignment Study, June 1971 (document 1.19). Document 2.8 "O and D Statistics and Forecasts for Toronto Airport" was input to this STOL Evaluation.

1.19 Air Passenger Distribution and Airport Assignment Study - June 1971

This report studies numerous possible locations for airports to handle the short-haul market, and the short-haul and long-haul markets. Its implications are far wider than STOL alone, although the conclusions it reaches regarding the short-haul market are relevant.

Also attached are the following documents:

11.1 The Impact of STOL on the Toronto Area Airports System - July 11, 1972

This is a summary paper which deals with the possible role of STOL in the Toronto Area Airports System in the future. It concludes that its introduction would have a minimal effect on either Malton's capacity or on the noise to nearby residents. This is because the amount of traffic that could be diverted from Malton is small compared to the overall rate of growth, and because STOL would not affect the number of long-haul flights (which are responsible for the major part of the noise annoyance).

11.2 An Assessment of STOL Technology - November 1970

This report, prepared for the Canadian Transportation Commission Research Division in November 1970, concludes that there are no major technological impedences to prevent the introduction of a first generation STOL transport system; but points out that a comprehensive research and development program would be necessary to remove the many technical, economic and institutional impedences implied by a second generation system.

11.3 STOL Aircraft Future Trends - May 1971

This report was published by the Transport Aircraft Council of the Aerospace Industries Association of America in May 1971. It recognizes the prime initial market to be the short-haul inter-city traveller, and suggests future development into a possible STOL system where a city and its suburbs might be served by multiple STOLports.

11.4 STOL Transportation System Planning - May 1971

This report was published by DeHavilland Aircraft of Canada Ltd. in May 1971. It deals principally with the technicalities of supply of facilities, the demand being dealt with in a more subjective manner. The conclusions relating to time savings are optimistic for earlier generations of STOL aircraft and apply only to later generation jet STOL aircraft.

11.5 V/STOL Community Annoyance due to Noise: Proposed Indices and Levels - March 1972

This study was first released by the Institute for Aerospace Studies, University of Toronto, in March 1972. The final version was published in June 1972. This study suggests that the impact of noise from V/STOL operations should be evaluated differently from that for CTOL operations. It especially emphasizes that once a certain level of noise in excess of background is exceeded, community annoyance grows rapidly.

11.6 A Review and Analysis of STOL Systems Technology -
April 1970

This report by the Aviation Planning and Research Division of the Civil Aviation Branch, Ministry of Transport, dated April 1970, provides a review of the state of the art at that time. However, the introduction suggests that VTOL and STOL aircraft apparently provide a solution to the need for longer runways and land use zoning to minimize noise complaints. While this may be true for some airports, it is not the case in Toronto, both because short-haul trips suitable for STOL operations form a declining proportion of the air travel market, and because long-haul aircraft are the noisiest and create the majority of community annoyance.

/ All reports and information on the technical and economic feasibilities of STOL. These reports should project the number of passengers carried by STOL in the future and the effect this would have on Malton's capacity and on noise to nearby residents.

The following additional material is supplied:

11.7 Preliminary Report Concerning the Possible Noise Certification of STOL Aircraft - November, 1971

This report recognizes the contribution that STOL aircraft may make to the reduction of noise problems. It also draws attention to possible adverse reactions from the public.

11.8 Canada's STOL Program - A Progress Report, with attachment October, 1971

This report has as an attachment the paper "Some Canadian Government Initiatives on STOL, August, 1971". The report affirms the Canadian Government's interest in the STOL mode. It outlines some of the areas of concern of aviation planners relating to this mode. The attachment describes the Canadian Government's proposed Demonstration STOL Passenger Service which is being undertaken to verify the tentative conclusions reached, to test new techniques and to test the effects of varying such elements of the service as fares.

QUESTION 12:

All reports and information on the effect rapid ground transit systems between Toronto, Ottawa, Ste.Scholastique and Montreal could have on the need or location of a second airport.

The following information is supplied:

12.1 New Ground Transportation Technology and the New Toronto Airport - May 4, 1972

This is a summary document prepared for public information.

12.2 Advanced Ground Transportation Technology and the New Toronto Airport - July 11, 1972

This is a more detailed appraisal of the effects advanced ground transportation technology might have on the air travel market.

12.3 Intercity Passenger Transport Study - September 1970

This report was prepared by the Canadian Transport Commission Research Branch, and together with its technical support documents is the technical basis for Documents 12.1 and 12.2 above.

12.4 Intercity Passenger Transport Study: Tracked Air Cushion Vehicles in the Canadian Corridor - edited March 1971

This is one of the technical support volumes to Document 12.3 above.

12.5 Intercity Passenger Transport Study: Operating Costs for Conventional and STOL Aircraft - prepared November 1971

This is one of the technical support volumes to Document 12.3. The content matter is more relevant to question 11 than to question 12. It should be noted that the cost relationships developed in this volume have not been calibrated to actual operating conditions in Canada.

QUESTION 13:

All reports and information on the site selection criteria and methodology used by the M.O.T. on deciding on the Pickering site. In addition, we request all reports and information relating such criteria to the Pickering site and to the other sites previously considered.

Such reports would include but not be limited to the following areas:

A. Costs

- Primary (a) Capital (I) land acquisition
(II) airport construction
(III) ground transportation facilities
(IV) servicing facilities
(V) noise land compensation
- (b) Operating
(I) noise lands management
(II) direct airport user costs
(vehicle costs)
(III) airport operational maintenance
(IV) ground transportation operation
and maintenance
(V) servicing operation and maintenance

Secondary (a) Capital

Associated Community Development

(b) Operating

Indirect Airport User Cost (time costs)

B. Social/Environmental Criteria

- (a) Regional Planning Effects
- (b) Social Disruption
- (c) Pollution Effects
- (d) Ecological Effects
- (e) Alternative Potential Uses of Various Sites
- (f) Effect on Conservation Parks and Agricultural Activities

C. Technical Aviation Criteria

- (a) Air Operations and Control
- (b) Telecommunications
- (c) Climatology
- (d) Ornithology

D. Miscellaneous Criteria

- (a) Regional Economic Impact
- (b) Airport Attractiveness and Usability
- (c) Area Airport Systems Implications

Question 13:

- 2 -

Most of the documents listed under Question 1 bear also on this question to a greater or lesser extent; especially relevant are:

1.3, 1.4, 1.6, 1.11, 1.16, 1.18, 1.19, 1.20, 1.21, 1.22, 1.23, 1.24, 1.25, 1.26, and 1.27

The following summary documents prepared for public information are attached:

- 13.1 Toronto II - Site Evaluation Methodology, March 1972
This describes the methodology used in general terms.
- 13.2 Financial Implications of the New Toronto Airport, May 30, 1972
This document is based on Financial Planning Report One (Document 1.18) and Financial Planning Report Two (Document 1.26).
- 13.3 Aircraft Noise and the New Toronto Airport, May 4, 1972
This deals with the methods used for estimating noise annoyance of flight operations.
- 13.4 Air Quality and the New Toronto Airport, May 4, 1972
This document summarizes the results of an air quality survey carried out in the vicinity of Toronto International Airport by the Air Management Branch of the Ontario Department of Energy and Resources Management, and describes briefly certain improvements in engine performance recently developed.
- 13.5 Ground Transportation to the New Toronto Airport, May 4, 1972
This document summarizes the historical background of the expansion of ground transportation serving existing airports, describes the methodology used in the detailed studies, and outlines the findings of these studies.
- 13.6 Land Use and the New Toronto Airport, May 4, 1972
This document describes the studies undertaken relating to possible land use in the vicinity of the alternative sites prior to the detailed formulation of the provincial Development Plan, and shows how with the co-operation of Ontario the sites were subsequently reappraised against the criteria of the Provincial urban and regional development goals.
- 13.7 Off-Shore Airport Concepts, April 21, 1972
This document summarizes the consideration that was given to this concept.

- 13.8 Nuclear Power Plant and the New Toronto Airport, April 21, 1972
This document answers questions relating to airport location and the Pickering Nuclear Power Plant.
- 13.9 The New Metropolitan Toronto Zoo and the New Toronto Airport, April 21, 1972
This document explains that the new Metropolitan Toronto Zoo will not be affected by the location of the new Toronto airport.
- 13.10 Historical Sites and the New Toronto Airport, April 20, 1972
This document explains that where possible buildings or sites of historical significance will be left undisturbed by the development of the airport, and arrangements will be made for them to be managed in the public interest.
- 13.11 Farming and the New Toronto Airport, April 21, 1972
This document explains how phased development of the new airport will mean that the majority of the land acquired may continue to be farmed for many years.

In addition, the following source documents are attached:

- 13.12 Preliminary Evaluation of Soils, Materials, Water Supply and Sewage Disposal for Site Selection, September 26, 1969
This report dated September 26, 1969, studies nine sites to the north, south-west, west and north-west of Toronto. Note that in this early study the East, Northeast and North-west sites are not included, and that Southwest (rated most highly), West and North sites are included. Of the sites examined, only Numbers 1 and 72 were eventually chosen as representative of their zones. Sites at Orangeville and Port Perry were added subsequently.
- 13.13 Preliminary Evaluation of Soils, Materials, Water Supply and Sewage Disposal for Site Selection - Addendum No. 1
October 16, 1969
In this study two additional sites, including the ultimate East (Port Perry) site, have been added. The Northwest site is still not identified, and the Southwest site is still rated most highly.
- 13.14 Report on Evaluation of Four Alternative Sites for Toronto Airport II, April 1970
This report develops an hypothetical six-runway layout for the new Toronto airport for the purposes of comparative evaluation and applies it to the North, East, West and Northwest sites. It includes as attachments 13.15, -16, -17, -18 and -19 below.

The conceptual plan was modified slightly in each case to suit site conditions. Estimates of terminal costs are based

on a sketch of a terminal building plan concept. It was subsequently decided (see document 13.22 below) to use actual construction costs of Terminal 2 at Malton as a basis for terminal cost estimates and to establish a more accurate basis for the phasing of terminal requirements.

13.15, -16, -17, -18 Preliminary Report - Water Supply and Waste Disposal - Sites A, B, C and D, February & March 1970

This is a series of four reports which relates to the North, East, West and Northwest sites. Each report costs independent water supplies based on wells/lake sources, and independent waste treatment systems on the airport site. Only in the case of the West site does document 13.17 note the possibility of connecting to a possible regional water supply system. In the case of the Northeast site this applies for both water supply and waste disposal systems.

13.19 Report on Ground Transportation Requirements, April 1970

This report which supplements document 13.14 examines the internal ground transportation requirements of the new Toronto airport, based on the hypothetical six-runway layout and the sketch terminal building plan concept.

13.20 Transportation Study, Alternative Site Locations, April 22, 1970

This report by the DeLeuw Cather Company of Canada Ltd. is that referred to in document 13.5 above and also in document 1.7. The survey material on which this study is based has been included in answer to Question 2 as document 2.11.

13.21 Letter Report re land Cost Data, July 1970

These are the estimates of land cost used in the September 1970 report (document 1.11). They represent a revision of the costs examined in the Advisory Review (document 1.7).

13.22 Sensitivity Analysis of the Relative Costs of Sites for the New Toronto Airport, June 1971

The work described in this report was undertaken in February 1971, and is subject to the limitations stated on page 17. The financial analyses contained therein were superseded by those in Financial Planning Report One (document 1.18) which relies on current experience at Malton to develop more definitive cost data. The most significant conclusion is that the initial role of Malton after the new Toronto airport has been opened will influence costs more significantly than delaying the opening date of the new airport.

13.23 Documentation of Cost Data, June 1971

This is a working report compiled after the completion of the sensitivity analysis. It records the need to improve the cost base, and specifically records the decision to use actual costs for the construction of Terminal 2 at Malton as a basis for future terminal estimates, and more accurate phasing of terminal facility requirements.

The revisions to cost data were carried out as part of the task of preparing Financial Planning Report Number One (document 1.18).

13.24 Land Use Planning Segment of Toronto II Airport Noise Land Study, February 13, 1970

This is the report prepared by Project Planning Associates Ltd. in February 1970 and referred to in document 13.6, Land Use and the New Toronto Airport. It deals with the North, East, West and Northwest sites. The study assumes that at each of the four sites the land which might be affected by future flight operations relating to a six-runway airport would be acquired by the Government of Canada. It is designed to demonstrate how these lands might be managed by the Federal Government after acquisition. This method of protection was not adopted, in favour of a more effective joint Federal/Provincial approach.

It is relevant to note that this study was submitted before the Goals Planning Committee of the Province of Ontario had completed the first phase of its work. "Design for Development: The Toronto-Centred Region" was subsequently published by the Government of Ontario in May 1970.

13.25 Toronto II Airport Noise Lands Study, Land Economics Segment March 23, 1970

This second segment of the study of lands which might be affected by flight operations at a six-runway airport at each of four locations north, east, west and north-west of Toronto was undertaken by Canadian Urban Economics Limited. It is designed to estimate the financial implications of developing these lands after acquisition by the Federal Government.

13.26 Provision of Advice and Assistance in the Evaluation of ATC Factors Affecting the Choice of Site for a New Toronto Airport - May, 1970

This report indicates that while the west site is a maximum of 6% less expensive in terms of annual cost of increased route mileage penalties, it is 250% worse than the next alternative considered in terms of penalty points related to conflicts with Malton. This contributed to the rejection by the Ministry of the west site.

13.27 Toronto International Airport System (Economic Analysis) 1970-1990 - October, 1970

This is an early income and cash-flow analysis subsequently superseded by documents 1.18 and 1.26, Financial Planning Reports One and Two, already supplied.

13.28 A Study of Toronto Airport II Ground Transportation to Year 2000 - November, 1970

This report extends the studies reported on in document 13.20.

13.29 Ground Transportation Cost Analysis, Alternative Airport Systems - February, 1972

This report records the ground transportation evaluations undertaken during late 1970 and 1971. It provided input to the site analyses already supplied in answer to question 1 (Documents 1.20, 1.21, 1.22, 1.23, 1.25 and 1.27) and to the two Financial Planning Reports (Documents 1.18 and 1.26).

13.30 An Analysis of Toronto International Airport System - November, 1968

This early report examines four possible airport systems: Malton, Malton with northeast, northeast replacing Malton after 10 years, southwest replacing Malton after 10 years. This report is superseded by the subsequent system analyses already supplied as Documents 1.19, 1.20, 1.21, 1.22, 1.23, 1.24, 1.25, 1.26 and 1.27.

13.31 Toronto Airport II: General Soils and Materials
Information for Sites A, B, C and D - November, 1969

This is a preliminary report relating to the north, east, west and northwest sites.

13.32 Report: Soils and Materials Investigation, Site A -
January, 1970

This report relates to the north site.

13.33 Volume I: Subsoil Survey, Site B - January, 1970

This report relates to the east site.

13.34 Volume II: Materials Survey, Site B - January, 1970

This report relates to the east site.

13.35 Report: Soils and Materials Investigation, Site C -
December, 1969

This report relates to the west site.

13.36 Volume I: Soil Survey, Site D - December, 1969

This report refers to the northwest site.

13.37 Volume II: Materials Survey, Site D - December, 1969

This report refers to the northwest site.

13.38 A Study of Commercial Air Traffic in the Toronto Region
in Regard to a Proposed Two-Airport System - July, 1969

This preliminary report studies two possible roles for Malton and the new Toronto airport. It notes that the proposal to fully expand Malton was not accepted because both the necessary land acquisition and the problems of noise involved were unacceptable. It assumes that Malton should be a domestic airport and carry, in both the roles examined, only 25% of the traffic. Role Option B was that assumed in the May 1970 report, already supplied as Document 1.8.

13.39 Weather and the New Toronto Airport - June 11, 1972

This is a summary document prepared for public information.

13.40 Preliminary Climatological Assessment of Potential Airport Sites in the General Vicinity of Toronto - 1968/69

This analyzes a number of site localities including Peters Corner (the southwest) and Pickering (the northeast) together with Malton for comparison purposes. Note that an update of this information as it relates to the northeast and southwest sites is included in Appendix A to Document 1.21. (N.B. in Appendix A the topographical error reference annual frequency of 200/½ mile, 10% should read 1.0%.)

13.41 Meteorology Study - February, 1970

This analyzes the meteorological conditions at the north, east, west and northwest sites. It also includes a set of nine comparative graphs illustrating ceiling and visibility conditions completed as a result of further analysis in May 1971. This further analysis showed that the conditions in the winter months at the northwest are extremely poor, and this was a major contributory factor to the rejection of the northwest site.

13.42 Birds and the New Toronto Airport - May 4, 1972

This is a document prepared for public information.

13.43 The Economic Impact of the New Toronto Airport - April 20, 1972

This is a document prepared for public information.

13.44 Ecology and the New Toronto Airport - April 21, 1972

This is a document prepared for public information based on the Environmental Impact Study conducted by the Conservation Authority Branch of the Ontario Department of the Environment, and already made public by the Province.

13.45 Toronto II: Downtown and Malton Passenger Processing -
March, 1971

This working report reviewed the material available within the Team at that time relating to off-site processing of passengers.

13.46 Regional Impact of a New International Airport for
Toronto - March, 1970

This report was prepared for the provincial Department of Treasury and Economics, and the federal Ministry of Transport. It studies the broad regions of the north, east, west and northwest sites, and concludes that sites to the northwest or east of Toronto are preferred from the viewpoint of regional development. It also notes that the north site would be extremely disruptive.

13.47 Some Economic Benefits and the Regional Impact of the
Design for Aviation of the Toronto-Centred Region -
February, 1971

This is a summary report, the material for which is largely drawn from the report "Regional Impact of a New International Airport for Toronto" and supplied as document 13.46.

QUESTION 14:

Not only are all individual reports and information requested but the methodology used to weigh and integrate all reports dealing with the various quantitative and qualitative elements are requested. We request the report which integrates all separate individual reports into one comprehensive cost/benefit analysis.

The documents and commentary supplied in response to Question 1 constitute the comprehensive analysis of the major planning issues on the airport system and the site for the new Toronto airport, as studied since 1967.

The methodologies followed in individual studies are described in the relevant documents either already supplied or provided now.

The report which summarizes the conclusions has already been supplied as Document 1.27. This points out that in addition to meeting all principal criteria, the northeast is the most convenient for Toronto as the alternate airport to Malton. It identifies the reasons for the rejection of the other alternatives considered. It also describes the interim measures to be undertaken to meet the needs of South-western Ontario, and states that a study of the long-term requirements of that region will be the subject of continuing study.

QUESTION 15:

All reports and cost/benefit analyses which compare continued use of Malton with the opening of a second airport.

The summary document "Financial Implications of the New Toronto Airport" already supplied (document 13.2) summarizes the cost implications of developing Malton as compared with developing the new Toronto airport.

Relevant additional reference material is also included in Documents 1.5, 1.9, 1.10, 1.14, 1.15, 1.18, 1.23 and 1.26.

QUESTION 16:

All reports and information explaining why the initial decision to expropriate the noislands surrounding Airport II was reversed.

No decision was ever taken to expropriate lands which might be affected by flight operations at the new Toronto airport. Document 1.4, "A Study Outline to Determine the Location of a Site for a Second Airport to Serve Metropolitan Toronto" refers to the need to permanently protect such lands, and lists five possible methods of protection including that of "A joint Federal/Provincial development of an 'Airport City' under a compatible land use plan".

Document 1.5, May, 1969, refers to the assumption that the new Toronto airport would be located and protected in such a manner that urban encroachment would not take place.

Document 13.24, February, 1970, lists six options for protection and suggests that a combination may be the most feasible approach.

16.1 Land Acquisition - April, 1970

This report examines some implications of alternative methods of protection.

16.2 Land Mechanics Report - December, 1970

This report examines some of the possible methods of protection in more detail and points out, inter alia, that there are difficulties in attempting to apply the provisions of the Aeronautics Act. It also notes that the Provincial powers to zone for compatible land use had been strengthened by recent decisions in the Provincial Court of Appeal.

16.3 Land Management Report - July, 1971

This report concludes that with the required support from Ontario and careful ongoing management a combination of acquisition and zoning could be a viable alternative. (This co-operation has been forthcoming, and the agreements reached are the subject of clauses in the Annex of Understanding.)

QUESTION 17:

All reports and information explaining why Airport II as conceived in 1970 needed to be larger than was subsequently felt necessary.

Document 1.3 "Outline Conceptual Plan, Toronto International Airport", which together with Document 1.4 constitutes the description of the work to be undertaken to locate a new airport to serve the Toronto area, makes reference to the need for a new airport with only four runways.

The working report dated October 27, 1969, already supplied as Document 1.6, notes that four runways would provide more than adequate capacity to meet projected demand; but states that an ultimate development of six runways was assumed so as to be even more conservative.

In the fall of 1971 studies indicated that the most convenient solution would be a multiple airport system. In this case the ultimate requirement at the new Toronto airport would not exceed four runways because a significant part of the traffic would be accommodated at Malton and the Regional Airports.

The following additional information is supplied:

17.1 Toronto II Airport Size Alternatives - February 11, 1971

This volume develops conceptual layouts for alternative runway configurations for a new Toronto airport, varying from one to six runways. It shows that a four-runway layout with two close-in parallels and two widely spaced parallels has an Instrument Flight Rules (IFR) capacity of 139 movements per hour and a Visual Flight Rules (VFR) capacity of 180 movements per hour. The report translates this (by reference to appropriate utilizations, aircraft sizes and load factors) into an annual passenger capacity of 75 - 90 million..

18. The following information which does not relate directly to the 17 questions asked is also relevant and is attached:
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18.1 People, Malton, and the New Toronto Airport, June 12, 1972

This is a summary document prepared for public information dealing with social aspects of expanding Malton airport.

18.2 People and the New Toronto Airport, June 30, 1972

This is a document prepared for public information which discusses some of the issues of on-going interest to people on or in the vicinity of the site for the new Toronto airport.

18.3 Expropriation Procedures, April 21, 1972

This document prepared for public information briefly describes the procedures under the Federal Expropriation Act.

18.4 Cemeteries and the New Toronto Airport, April 21, 1972

This document prepared for public information briefly examines the future of cemeteries on the airport site.

18.5 Evaluation of Construction Methods for Off-shore Airports, August, 1969

The consideration given to off-shore airport concepts in site selection is discussed briefly in Document 13.7. This report records the conclusions of a major study undertaken by the Ralph M. Parsons Co. of Los Angeles, California, for the F.A.A. Its principal conclusion is that the off-shore airport is generally technically feasible, but will normally cost significantly more to construct than an on-shore airport. (The United States Government is continuing to investigate the practicability of off-shore airports and has recently awarded contracts for further work on this subject.)

18.6 Toronto Lakeshore Site Suitability, January, 1970

This is an analysis of meteorological conditions at Toronto Island versus Toronto International Airport, Malton.

18.7 Feasibility Study of Present and Proposed Toronto Island Airport, November, 1967

This early study examines the possibility of developing an airport for scheduled intercity operations to complement Malton. It questions whether passengers would find the Toronto Island location more convenient and also suggests that a STOL airport might be more appropriate for this type of operation than one of conventional size.

- 18.8 Manual of Design and Construction Practices
ILS Site Surveys, April, 1966
- 18.9 ILS Site Selection, November, 1967
with amendment, August 6, 1968
- 18.10 Terminal Area Radar Systems Siting Criteria,
December, 1968
- 18.11 Establishment and Commissioning of Non-Directional
Beacons, January, 1970
with amendment, April 21, 1970
- 18.12 VOR Site Selection, May, 1970
- 18.13 VHF Doppler DF Site Selection, July, 1970
Amendment No. 3, March 25, 1971
- 18.14 Siting of New Weather Radars, CBE, June, 1972
- 18.15 DME Siting with ILS Facilities
- 18.16 SSR Siting Criteria, January 15, 1970

